NEC

NEC Express5800/BladeServer Series

N8400-083F/084F/085F

NEC Express5800/B120a
User's Guide

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Keep this User's Guide at hand for quick reference at anytime necessary.

SAFETY INDICATIONS

Follow the instructions in this User's Guide for your safety to use the server.

The server contains components with possible danger, hazards that may cause by ignoring warnings, and preventive actions against such hazards.

Server components with possible danger are indicated with a warning label placed on or around them as well as described in this User's Guide.

In the User's Guide or warning labels, "WARNING" or "CAUTION" is used to indicate a degree of danger. These terms are defined as follows:

⚠ WARNING	Indicates the presence of a hazard that may result in death or serious personal injury if the instruction is ignored.
⚠ CAUTION	Indicates the presence of a hazard that may cause minor personal injury, including burns, or property damage if the instruction is ignored.

Precautions and notices against hazards are presented with one of the following three symbols. The individual symbols are defined as follows:

	This symbol indicates the presence of a hazard if the instruction is ignored. An image in the symbol illustrates the hazard type. (Attention)
	This symbol indicates prohibited actions. An image in the symbol illustrates a particular prohibited action. (Prohibited Action)
	This symbol indicates mandatory actions. An image in the symbol illustrates a mandatory action to avoid a particular hazard. (Mandatory Action)

(Example)
(Example)

Symbol to draw attention

Description of a danger

Term indicating a degree of danger

⚠ CAUTION

Plug in to a proper power source.
Use a proper wall outlet. Use of an improper power source may cause a fire or a power leak.

Symbols used in this User's Guide and warning labels are listed below.

Attentions

	Indicates that improper use may cause an electric shock.
	Indicates that improper use may cause fumes or fire.
	Indicates that improper use may cause fingers to be caught.
	Indicates that improper use may cause personal injury by the moving fan blades.
	Indicates that improper use may cause personal injury.
	Indicates that improper use may cause explosion.
	Indicates a general notice or warning that cannot be specifically identified.

Prohibited Actions

	Do not disassemble, repair, or modify the server. Otherwise, an electric shock or fire may be caused.
	Do not touch any component other than specified. Otherwise, an electric shock or personal injury such as burns may be caused.
	Keep away from fire. Otherwise, an ignition may be caused.
	Keep away from water or liquid. Otherwise, an electric shock or fire may be caused.
	Indicates a general prohibited action that cannot be specifically identified.

Mandatory Action

	Unplug the power cord of the server. Otherwise, an electric shock or fire may be caused.
	Indicates a mandatory action that cannot be specifically identified. Make sure to follow the instruction.

NOTE: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

BSMI Statement (N8400-083F/084F/085F)

警告使用者：

這是甲類的資訊產品，在居住的環境中使用時，可能會造成射頻干擾，在這種情況下，使用者會被要求採取某些適當的對策。

CE Mark EMI:

CE

Australia EMI:

NOTE: This is a Class A product. In domestic environment, this product may cause radio interference in which case the user may be required to take adequate measures.

Canada EMI:

This Class A digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

Cet appareil numérique de la classe A respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

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Momentary voltage drop prevention:

This product may be affected by a momentary voltage drop caused by lightning. To prevent a momentary voltage drop, an AC uninterruptible power supply (UPS) unit should be used.

Notes:

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PREFACE

Welcome to the NEC Express5800/BladeServer series server.

The NEC Express5800/BladeServer holds powerful performance and employs the latest technology to implement a computer for the next generation. With its potential capabilities, the server may be used as the workstation PC that configures a client-server system and provides high-speed processing and superior reliability.

Read this User's Guide thoroughly to fully understand handling of the server and appreciate its functions to the maximum extent.

ABOUT THIS USER'S GUIDE

This User's Guide is a guide for proper setup and use of the server.

This User's Guide also covers useful procedures for dealing with difficulties and problems that may arise during setup or operation of the server.

Keep this manual for future use.

The following describes how to proceed with this User's Guide.

How to Use This User's Guide

To aid you in finding information quickly, this User's Guide contains the following information:

Chapter 1 Notes on Using Your Server
includes information that needs attention to use the CPU blade. Make sure to read this chapter before setting up and using the CPU blade. It also includes requirements and advisory information for transfer and disposal of the CPU blade.

Chapter 2 General Description
includes information necessary to use the CPU blade, such as names and functions of its components.

Chapter 3 Setting Up Your Server
tells you how to select a site, unpack the system, make cable connections, and power on your system.

Chapter 4 Configuring Your Server
tells you how to configure the system and provides instructions for running the BIOS Setup Utility and the LSI Software RAID Configuration Utility, which is used to configure RAID drive in your system.

Chapter 5 Installing the Operating System
describes how to install the operating system.

Chapter 6 Installing and Using Utilities
describes how to install the utilities for the server. It also includes a description on using the attached "NEC EXPRESSBUILDER" DVD.

Chapter 7 Maintenance
provides you with all the information necessary to maintain successful operation of the CPU blade.

Chapter 8 Troubleshooting
contains helpful information for solving problems that might occur with your system.

Chapter 9 Upgrading Your Server
provides you with instructions for upgrading your system with an additional processor, optional memory, optional mezzanine cards, and hard disk drives.

Appendix A Specification
provides specifications for your CPU blade.

Appendix B Installing the Operating System
describes how to install Microsoft Windows Server 2008, Microsoft Windows Server 2003 x64 Editions, and Windows Server 2003 without using Express Setup.

Text Conventions

The following conventions are used throughout this User's Guide. For safety symbols, see "SAFETY INDICATIONS" provided earlier.

IMPORTANT:	Items that are mandatory or require attention when using the server
NOTE:	Helpful and convenient piece of information

IN THE PACKAGE

The carton contains various accessories, as well as the server itself. See the packing list to make sure that you have everything and that individual components are not damaged. If you find any component missing or damaged, contact your service representative.

- Store the provided accessories in a designated place for your convenience. You will need them to install an optional device or troubleshoot the server, as well as to set it up.
- Make a backup copy of each provided floppy disk, if any. Store the original disk as the master disk in a designated place, and use its copy.
- Improper use of any provided floppy disk or CD-ROM may alter your system environment. If you find anything unclear, immediately ask your service representative for help.

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Chapter 1

Notes on Using Your Server

This chapter includes information necessary for proper and safe operation of the server.

SAFETY NOTES

This section provides notes on using the server safely. Read this section carefully to ensure proper and safe use of the server. For symbols, see "SAFETY INDICATIONS" provided earlier.

⚠ WARNING

Do not use the server for services where critical high availability may directly affect human lives.

The server is not intended to be used with or control facilities or devices concerning human lives, including medical devices, nuclear facilities and devices, aeronautics and space devices, transportation facilities and devices; and facilities and devices requiring high reliability. NEC assumes no liability for any accident resulting in personal injury, death, or property damage if the server has been used in the above conditions.

Do not disassemble, repair, or alter the server.

Never attempt to disassemble, repair, or alter the server on any occasion other than described in this User's Guide. Failure to follow this instruction may cause an electric shock or fire as well as malfunctions of the server.

Do not remove the lithium battery.

The server contains the lithium battery. Do not remove the battery. Placing the lithium close to a fire or in the water may cause an explosion.

When the server does not operate appropriately due to the dead lithium battery, contact your service representative. Do not disassemble the server to replace or recharge the battery by yourself.

Do not use the server if any smoke, odor, or noise is present.

If smoke, odor, or noise is present, immediately turn off the system and disconnect the power plug from the outlet, then contact your service representative. Using the server in such conditions may cause a fire.

Keep needles or metal objects away from the server.

Do not insert needles or metal objects into ventilation holes in the server. Doing so may cause an electric shock.

Use the devices only in the specified areas.

CPU blades and hard disk drives should be installed in the dedicated Blade Enclosure for their uses. Do not install the CPU blades and hard disk drives in a chassis other than the Blade Enclosure. Failure to follow it may result in fire and/or electric shock to occur.

⚠ WARNING

Do not handle the CPU blade if it is installed in the Blade Enclosure.

To install or remove an option from the CPU blade, first turn off the power of the CPU blade and remove the CPU blade from the Blade Enclosure. If you touch parts on the CPU blade with it connected to the Blade Enclosure, you may get an electric shock.

Do not install or remove more than one CPU blade at a time.

Install or remove CPU blades one by one. If you install or remove more than one CPU blade at a time or a CPU blade with the cover of another slot removed, you may be electrically shocked.

Do not use the equipment in the place where corrosive gases exist.

Make sure not to locate or use the server in the place where corrosive gases (sulfur dioxide, hydrogen sulfide, nitrogen dioxide, chlorine, ammonia, ozone, etc) exist.
Also, do not set it in the environment where the air (or dust) includes components accelerating corrosion (ex. sulfur, sodium chloride) or conductive metals. There is a risk of a fire due to corrosion and shorts of an internal printed board.

⚠ CAUTION

Keep water or foreign matter away from the CPU blade.

Do not let any form of liquid (water etc.) or foreign matter (e.g., pins or paper clips) enter the server. Failure to follow this warning may cause an electric shock, a fire, or a failure of the server. When such things accidentally enter the server, immediately turn off the power and disconnect the power plug from the outlet. Do not disassemble the server. Contact your service representative.

Make sure to complete device installation.

Always install a CPU blade, hard disk drive and board firmly. An incompletely installed device may cause a contact failure, resulting in smoking or fire.

Do not use any unauthorized interface cable.

Use only interface cables provided by NEC and locate a proper device and connector before connecting a cable. Using an authorized cable or connecting a cable to an improper destination may cause a short circuit, resulting in a fire.
Also, observe the following notes on using and connecting an interface cable.

- Do not use any damaged cable connector.
- Do not step on the cable.
- Do not place any object on the cable.
- Do not use the Blade Enclosure with loose cable connections.

CAUTION

Avoid installation in extreme temperature conditions.

Immediately after the server is powered off, its internal components such as hard disk drives are very hot. Leave the server until its internal components fully cool down before installing/removing any component.

Avoid contact with the server during thunderstorms.

Disconnect the power plug from the outlet when a thunderstorm is approaching. If it starts thundering before you disconnect the power plug, do not touch any part of the server including the cables. Failure to follow this warning may cause a fire or an electric shock.

Keep animals away from the server.

Pet's discharges or fur may enter the CPU blade and cause a fire or electric shock.

FOR PROPER OPERATION

Observe the following notes for successful operation of the server. Use of the server ignoring the notes will cause malfunctions or failures of the server.

- CPU blade
  - N8400-083F/084F/085F CPU blade assembly can be installed in the Blade Enclosure (SIGMABLADE).
  - Install or remove CPU blades one by one.
  - Hold the portions covered with metal plates when a CPU blade is installed or removed. To carry a CPU blade, put it into the case in which the CPU blade was contained at the purchase and pack it into the package.
  - The CPU blade is extremely sensitive to static electricity. Make sure to touch the metal frame of the server to discharge static electricity from your body before handling the CPU blade. Do not touch the CPU blade terminals or on-board parts by a bare hand and place the CPU blade directly on the desk.
  - Check and adjust the system clock before the operation if any of the following conditions is applicable.
    - After carriage of device
    - After storage of device
    - After the device is entered into the pause state under the environmental condition enduring device operation (temperature: 10°C - 35°C, humidity: 20% - 80%)

    Check the system clock at the rough rate of once per month. When the system clock is installed in a system requiring high time precision, it is recommended to use a time server (NTP server).
    If the system clock is remarkably delayed or advanced as the passage of time in spite of adjustment, contact your service representative to ask maintenance.
  - Store the unit under the storage condition (temperature: -10°C - 55°C, humidity: 20% - 80%, without condensation) to allow built-in devices and the unit to operate correctly in the next operation.
  - Before turning off the power of a CPU blade, shut down the CPU blade correctly.
  - Turn on the power of each CPU blade by the use of the POWER switch or the remote power-on after the period of 30 seconds or longer has passed from the supply of AC power (the POWER lamp of the CPU blade goes on amber) to every power unit. The power of the CPU blade may not be turned on if the power-on operation is done within the period of less than 30 seconds from the supply of AC power. After making sure that the AC power is supplied to every power unit, turn on the power of each CPU blade by using the POWER switch.
  - After turning off the power of a CPU blade once, turn on the power again after 30 seconds have passed from the power-off.
  - Remove a CPU blade after turning off the power of the CPU blade.

- The CPU blade contains precision component that is easily affected by drastic temperature change. If the CPU blade is used after storage or relocation, make sure that the CPU blade is fully adapted to the operating environment.
- Make sure that the options are optional devices for the purchased blade server. If an option can be installed or connected to the CPU blade, the option may not operate properly and further the CPU blade may be defected.
- Do not perform any of the following operation during POST (including similar operations from EM card and external applications).
  - Press the POWER switch of the CPU blade.
  - Press the RESET switch of the CPU blade.
  - Remove the CPU blade from the Blade Enclosure.
  - Disconnect the power cord from the power unit of the Blade Enclosure.

■ Hard disk drive

- The hard disk drive is extremely sensitive to static electricity. Make sure to touch the metal frame of the server to discharge static electricity from your body before handling the hard disk drive. Do not touch the hard disk drive terminals or on-board parts by a bare hand and place the hard disk drive directly on the desk.
- Do not give excess shocks or vibrations to the hard disk drive. Failure to follow it may cause the hard disk drive to be defected.
- The hard disk drive to be used should be options of the purchased blade server.
- Confirm the slot to which the hard disk drive is inserted. The slot for the hard disk drive to be connected to each CPU blade is defined previously.
- The hard disk drive contains precision component that is easily affected by drastic temperature change. If the hard disk drive is used after storage or relocation, make sure that the hard disk drive is fully adapted to the operating environment.

■ Optional memory, processor, mezzanine card, board, and other electronic components

- These components are extremely sensitive to static electricity. Make sure to touch the metal frame of the server to discharge static electricity from your body before handling the components. Do not touch the terminals or parts on the components by a bare hand and place the components directly on the desk.
- Make sure that the options are optional devices for the purchased blade server. If an option can be installed or connected to the server, the option may not operate properly and further the server itself may be defected.
- The internal option device contains precision component that is easily affected by drastic temperature change. If the device is used after storage or relocation, make sure that the device is fully adapted to the operating environment.
- It is recommended to use options provided by NEC. Some memory devices and hard disk drives of other vendors are designed to be available for the server. If such an option causes the server to be defected or damaged, you will be charged for the repair within the warranty period.

■ Do not use a cellular phone or pager around the server.

Turn off the cellular phone or pager. Radio interference may cause malfunctions of the server.

TRANSFER TO THIRD PARTY

The following must be observed when you transfer (or sell) the server or software provided with the server to a third party:

Server

Make sure to provide this manual along with the server to a third party.

IMPORTANT: About data on the hard disk drive

Be sure to take appropriate measures not to leak important data (e.g., customers' information or companies' management information) on the removed hard disk drive to any third parties.

Data seems to be erased when you empty "Recycle Bin" of Windows or execute the "format" command of the operating system. However, the actual data remains written on the hard disk drive. Data not erased completely may be restored by special software and used for unexpected purposes.

It is strongly recommended that the software or service (both available at stores) for data erasure should be used in order to avoid the trouble explained above. For details on data erasure, ask your sales representative.

Provided Software

To transfer or sell any software application that comes with the server to a third party, the following requirements must be satisfied:

- All provided software applications must be transferred and no backup copies must be retained.
- Transfer requirements listed in "Software License Agreement" that comes with each software application must be satisfied.
- Software applications that are not approved for transfer must be uninstalled before transferring the server.

DISPOSAL AND CONSUMABLES

- Dispose of the CPU blade, hard disk drives, Blade Enclosure, option board, floppy disks, and CD/DVD-ROMs according to all national laws and regulations. Also dispose of the power cord provided with the server to avoid diversion to some other devices.

IMPORTANT:

- For disposal (or replacement) of the battery on the mother board of the server, consult with your service representative.
- It is the user's responsibility to completely erase or modify all the data stored in storage device such as hard disk drive so that the data cannot be restored.

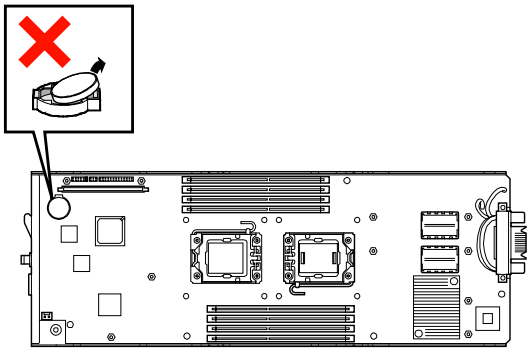
- The server contains some components that are only good for a limited period of time and require replacement. For stable operation of the server, NEC recommends you replace these components on a regular basis. Consult with your service representative for replacement or the product lives.

⚠ WARNING

Do not remove the battery.

The server contains the lithium battery. (Some option devices contain lithium battery, nickel cadmium battery, or nickel hydrogen battery.) Do not remove the battery. Placing the lithium, nickel cadmium, or nickel hydrogen battery close to a fire or in the water may cause an explosion.

When the server does not operate appropriately due to the dead lithium battery, contact your service representative. Do not disassemble the server to replace or recharge the battery by yourself.



CPU blade

USER SUPPORT

Before Asking for Repair, do the following when the server appears to fail:

1. Check if the power cord and the cables to other devices are properly connected.
2. See Chapter 8 to find if your problem fits the description. If it does, take the recommended measure for it.
3. Check if the software required for operation of the server is properly installed.

If the server still appears to fail after you have taken the above actions, consult with your service representative immediately. Take notes on lamp indications of the server and alarm indications on the display unit before consultation, which may provide a significant help to your service representative.

Advice for Health

The longer you keep using the computer equipment, the more you become tired, which may cause disorders of your body. When you use a computer, observe the following to keep yourself from getting tired:

Good Working Posture

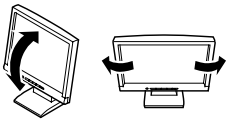
You have good posture if the following are satisfied when you use a computer:

- You sit on a chair with your back straight.
- Your hands are parallel with the floor when you put them on the keyboard.
- You look at the screen slightly lower than your eye height.

You have "good working posture" as described in the above when no part of your body is under excess strain, in other words when your muscles are most relaxed.

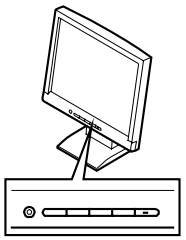
You have "bad posture" when you sit with your back hunched up or you operate a display unit with your face close to the screen. Bad working posture may cause eye strain or poor eyesight.

Adjustment of Display Unit Angles



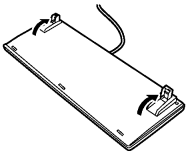
Most display units are designed for adjustment of the horizontal and vertical angles. This adjustment is important to prevent the screen from reflecting bright lights and to make the display contents easy to see. You will not be able to keep "good working posture" and you will feel more tired than you should if you operate a display unit without adjusting horizontal and vertical angles.

Adjustment of Screen Brightness and Contrast

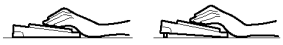


The display unit has brightness and contrast adjustment functions. The most suitable brightness and contrast depend on the individual and the working environment (well-lighted room or insufficient light). Adjust brightness and contrast so that the screen will be easy to see. An extremely bright or dark screen will give a bad effect to your eyes.

Adjustment of Keyboard Angle



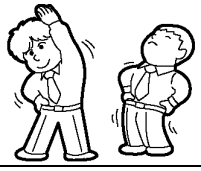
The keyboard provided with the server is designed for adjustment of an angle. Adjust the keyboard angle at which the keyboard is easy to operate. The adjustment assists in reducing strain on your shoulders, arms, and fingers.



Cleaning of Equipment

Clean equipment regularly. It is difficult to see the display contents on a dusty screen. Keeping equipment clean is also important for your sight.

Fatigue and Rest



If you feel tired, you should stop working and do light exercises.

Chapter 2

General Description

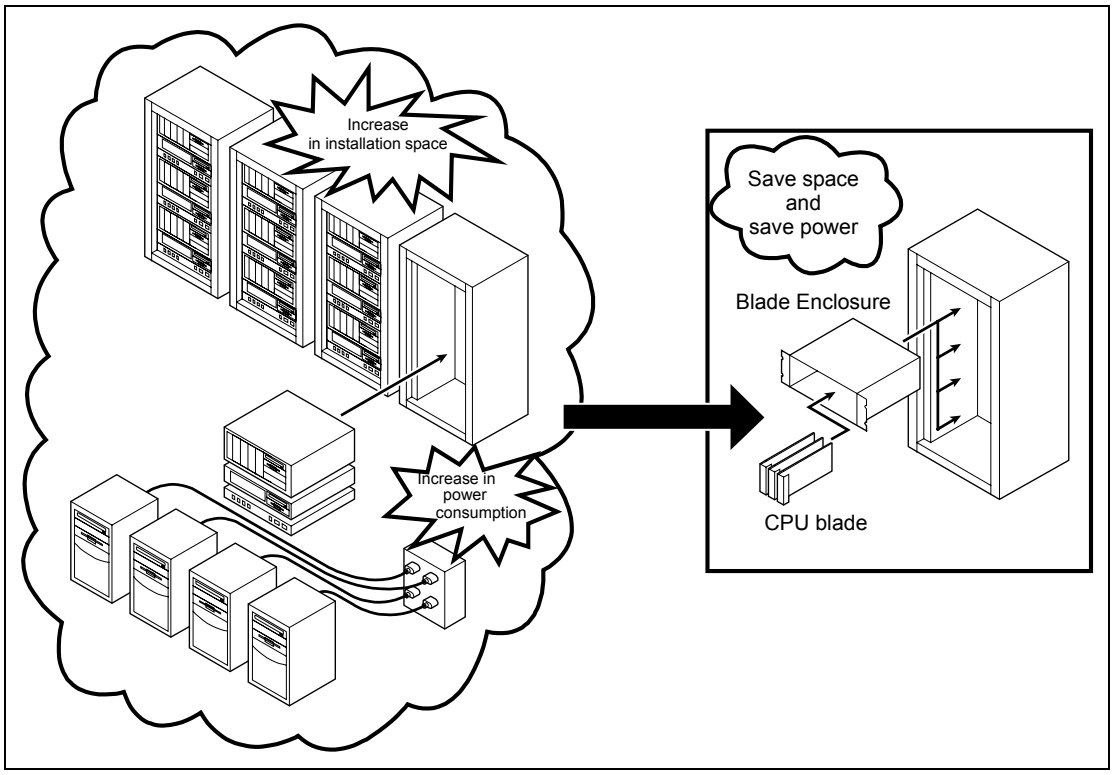
This chapter provides information that you should be familiar with before using the server. It includes names and functions of the components and features of the server.

OVERVIEW

BladeServer is a modular and multiprocessing system that includes processor, memory, network connections, optional add-in card slot, and associated electronics, all on a single mother board called a CPU blade.

The CPU blade, hard disk drive, and other CPU blades are typically installed into a rack-mountable enclosure that houses multiple CPU blades that share common resources such as cabling, power supplies, and cooling fans.

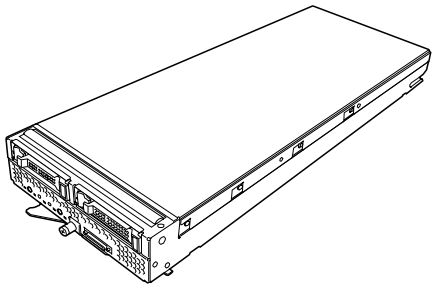
This high-density technology reduces the installation space, lowers a total cost of ownership, and offers increased computing density while ensuring both maximum scalability and ease of management.



STANDARD FEATURES

High performance

- High-speed Intel® Xeon® Processor
- DDR3-1066 Registered DIMM or DDR3-1333 Unbuffered DIMM
- High-speed 1000BASE-T interface x2 (1Gbps supported)
- High-speed disk access (SAS and SATA)



Management Utilities

- NEC ESMPRO
- Remote monitoring feature (EXPRESSSCOPE engine 2)

Maintenance Features

- Off-line Maintenance Utility
- Memory dump feature using the DUMP switch

Expandability

- Two mezzanine card slots
- Large memory of up to 64GB
- Up to two multi-processors are available for upgrade.
- Two network ports
- Up to two SAS or SATA hard disk drives (2.5-inch) per CPU blade
- Two USB (Ver 2.0) interface ports

High-reliability

- Memory monitoring feature (correction of correctable error/detection of uncorrectable error)
- Bus parity error detection
- Temperature detection
- Error notification
- Internal voltage monitoring feature
- BIOS password feature
- Auto-rebuild feature (hot-swappable)

Many Available Features

- Software power-off
- Remote power-on feature
- AC-Link feature

Self-diagnosis

- Power On Self-Test (POST)
- Test and Diagnosis (T&D)

Easy and Fine Setup

- NEC EXPRESSBUILDER (system management tools)
- SETUP (BIOS setup utility)
- LSI Software RAID Configuration Utility (RAID configuration utility)

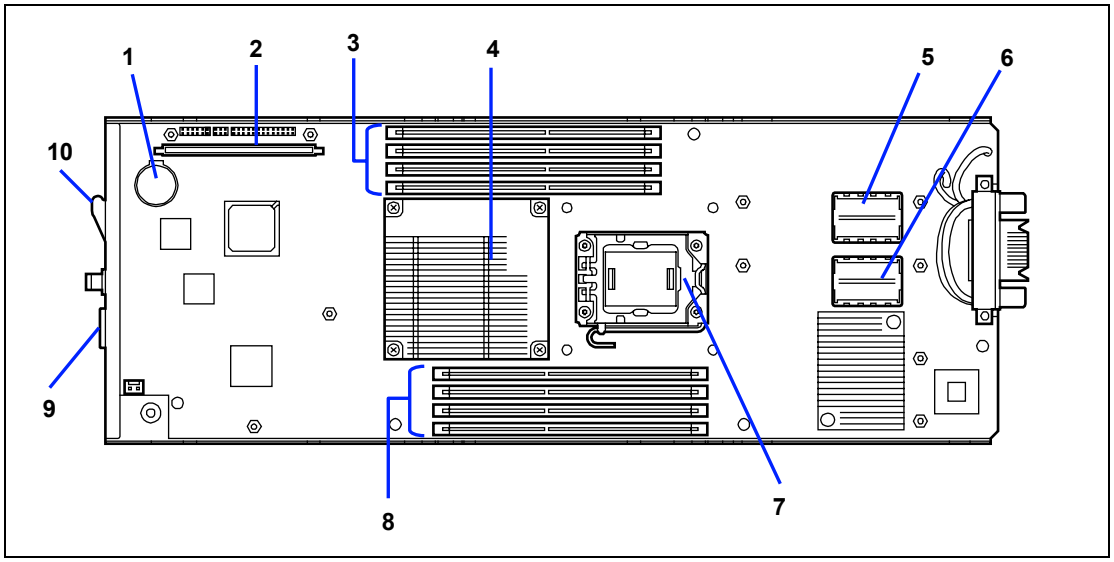
PART NAMES AND CONTROLS

This section describes the names and features of the sections in the device.

CPU Blade

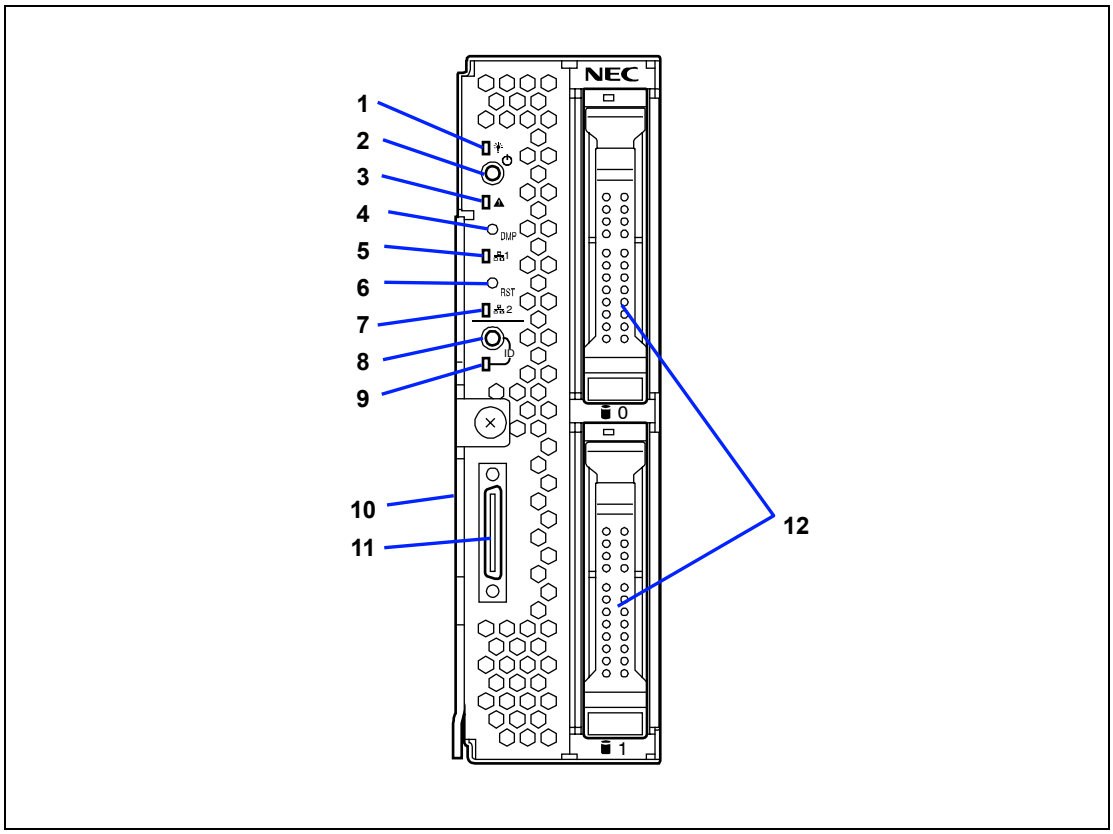
This section describes the names, installation positions, and features of the sections on the CPU blade.

Onboard Components



1 **Lithium battery**
2 **Interface card connector for hard disk drive**
3 **DIMM slot (CPU #1)**
CPU1_DIMM1 to CPU1_DIMM4 from top
4 **Heat sink**
Install the processor #1 (CPU #1) below this heat sink.
5 **Type 2 mezzanine slot**
Slot to install mezzanine card for blade. The slot number is "MEZ2".
6 **Type 1 mezzanine slot**
Slot to install mezzanine card for blade. The slot number is "MEZ1".
7 **DIMM slot (CPU #2)**
CPU2_DIMM1 to CPU2_DIMM4 from bottom
8 **Socket cover**
Install the processor #2 (CPU #2) below this socket cover.
9 **SUV connector**
10 **Eject lever**

CPU Blade Access Side



1 POWER lamp
The lamp goes on green when the CPU blade is powered on.
The lamp goes on amber when the CPU blade is powered off but the power is supplied from the power supply unit.

2 POWER switch
The switch is intended to turn on or off the power of the CPU blade itself. Pressing the switch for 4 seconds or longer causes the power supply to be turned off forcibly.

3 STATUS lamp (green/amber/red)
The lamp indicates the status of the CPU blade. See "Lamp Indications" described later for the indications and meanings of the lamp.

4 DUMP switch
Press this switch to run the memory dump.

5 LAN1 Link/Access lamp (green)
The lamp goes on when LAN port 1 is connected to the network. The lamp blinks when data is being transmitted.

6 RESET switch
Press this switch to reset the CPU blade.

7 LAN2 Link/Access lamp (green)
The lamp lights when LAN port 2 is connected to the network. The lamp blinks when data is being transmitted.

8 ID switch
Press this switch to turn on or off the ID lamp.

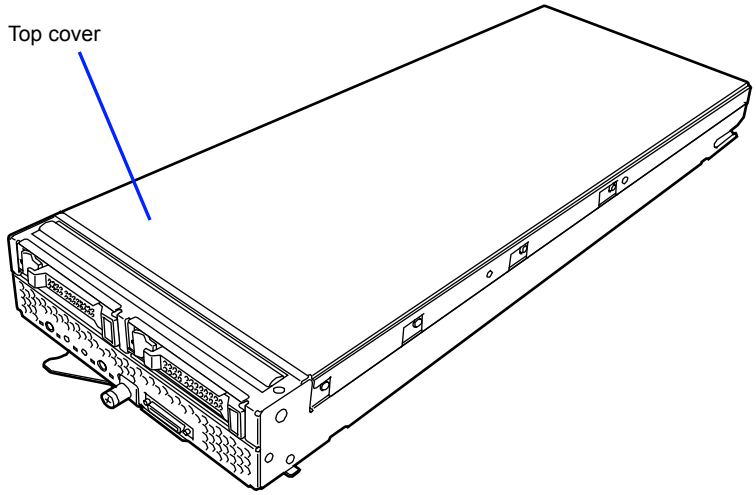
9 ID lamp (blue)
The lamp is intended to identify the CPU blade in the system. The lamp is lit by a switch or software command.
When the recognize command is received from software, the lamp blinks. If you press the ID switch, the lamp goes on.
You may use the remote control feature of EXPRESSSCOPE Engine 2 (BMC) to perform the same operation as using the ID switch on the server.

10 Eject lever
Pull the lever to remove the CPU blade from the Blade Enclosure.

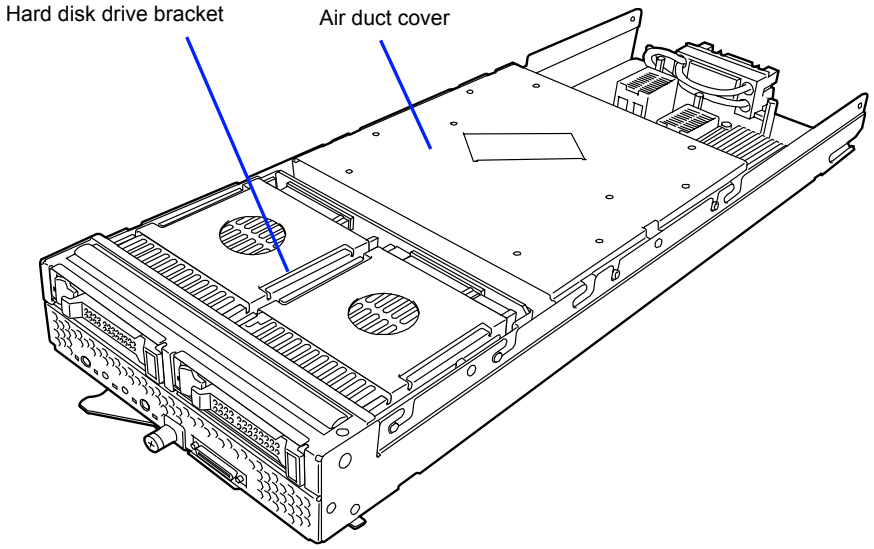
11 SUV connector
This connector sends or receives various signals.
The K410-150(00) SUV cable is connected to this connector.

12 Hard disk drive (top: slot 0, bottom: slot 1)

External View



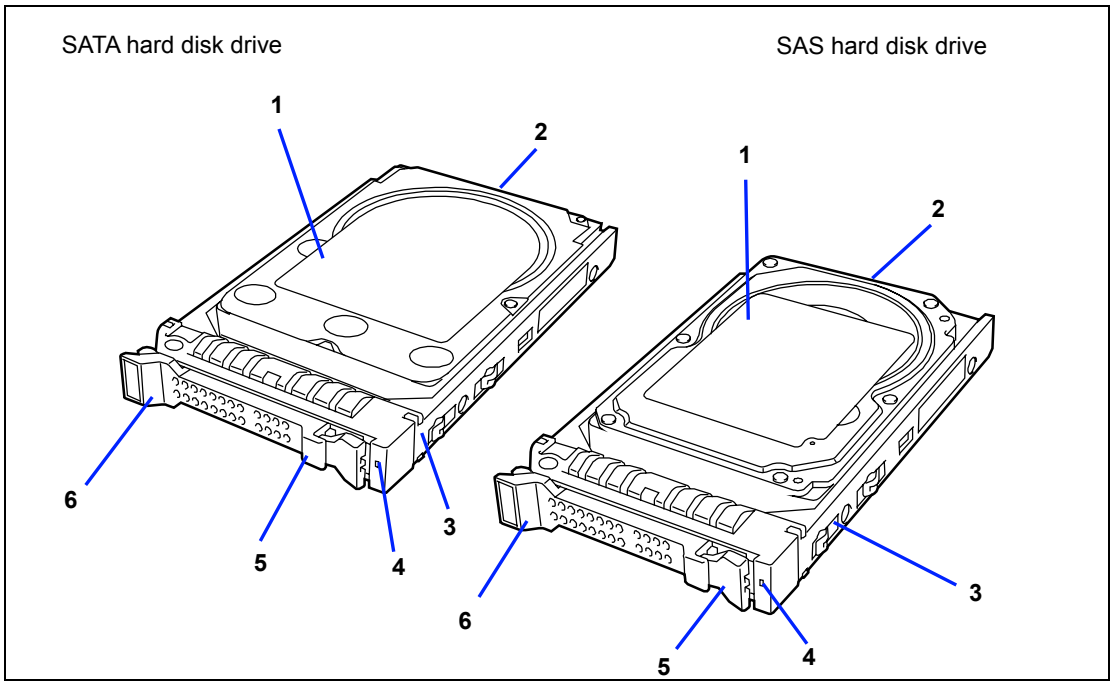
CPU blade with its cover installed



CPU blade with its cover removed

Hard Disk Drive

The hard disk drive is an optional device. An operating system may be installed in the hard disk drive. Handle it carefully.



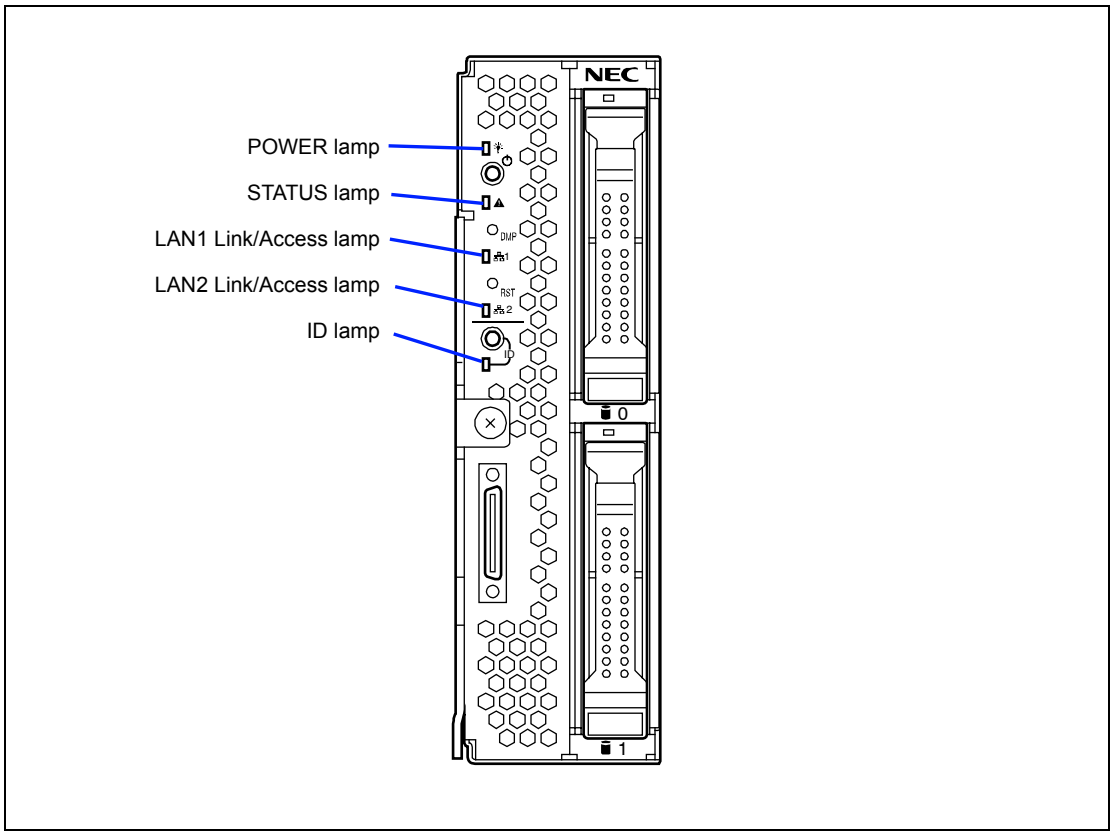
1 **Hard disk drive**
2 **BP connector**
Used to connect with the hard disk drive backplane in the CPU blade.
3 **Drive carrier**
4 **Disk access lamp (green/amber)**
Lights green in accessing to a hard disk drive.
Lights amber if a fault occurs in a hard disk drive. Blinks green or amber alternately or blinks amber while array disks are rebuilt. However, when hard disk drives are operated in the array configuration using SW RAID, the disk access lamp operates only in the OS boot status.
5 **Lever**
The lever is intended to fix the hard disk drive. Pull the lever to remove the hard disk drive.
6 **Handle**
Hold the handle when the hard disk drive is installed or removed.

Lamp Indications

This section describes the positions and display meanings of the lamps on the CPU blade and hard disk drive.

CPU Blade

The CPU blade includes five lamps.



POWER Lamp

The POWER lamp lights green while the power of the CPU blade is on. The lamp lights amber when the CPU blade is powered off but the power is supplied from the power supply unit. The lamp is off if the power is not supplied to the system.

STATUS Lamp

The STATUS lamp stays lit in green when the CPU blade is in successful operation. When the STATUS lamp is flashing in amber or red, it indicates that the system has failed.

In addition, you can view the detailed information on error message on virtual LCD when the STATUS lamp is flashing in amber or red.

You can use the virtual LCD through the Web browser of EXPRESSSCOPE engine (BMC) or NEC ESMPRO Manager.

The following table lists indications of the STATUS lamp, descriptions, and actions to take.

If an error occurs, contact your service representative.

NOTE: If the CPU blade has the NEC ESMPRO installed, you can view the System Event Log (SEL) to identify the cause of a trouble.

STATUS lamp indications

STATUS lamp		Description	Action
Status	**Color**		
On	Green	The CPU blade is operating normally.	–
Off	–	The power is turned off.	Turn on the power.
On	Red	BMC is being initialized.	1. Wait until the lamp goes off. 2. If the lamp still goes on, check installation of the CPU blade.
Flash	Red	See the table "Virtual LCD indications when STATUS lamp is flashing in red" described later.	
Flash	Amber	See the table "Virtual LCD indications when STATUS lamp is flashing in amber" described later.	

NOTE: If the CPU blade is powered off while the STATUS lamp is flashing in amber or red, the indication of the STATUS lamp is retained except for certain factors. When the CPU blade is powered on, the STATUS lamp goes on green (normal status).

Virtual LCD indications when STATUS lamp is flashing in red

On-screen message	Description	Action
Proc 1 IERR	An error was detected in CPU#1.	Turn of the power once and then on again. If an error message appears on POST screen, take note of the message, and contact your service representative. If no error message appears, check the IPMI information by using the Off-line Maintenance Utility.
Proc 2 IERR	An error was detected in CPU#2.	
WDT Timeout	Watchdog timer timeout error occurred.	
WDT Power Down	Forcedly powered off due to watchdog timer timeout error.	
SMI Timeout	A timeout error occurred while the system management interrupt process is in progress.	
ErrPause in POST	The system is waiting for key entry due to serious POST error.	Check the error message on POST screen, take note of it, and contact your service representative.
DUMP Request !	Under memory dump request	Wait until dump collection completes.
CPU1_DIMM U-Err	An uncorrectable memory error was detected on CPU1_DIMM.	Check installation status DIMM. If the same error persists, contact your service representative.
CPU2_DIMM U-Err	An uncorrectable memory error was detected on CPU2_DIMM.	
Proc Missing	No CPU is installed in slot CPU#1.	Check installation status of CPU. If the same error persists, contact your service representative.
Proc1 Config Err	The CPU installed in the CPU#1 slot is unsupported or its combination is illegal.	
Proc2 Config Err	The CPU installed in the CPU#2 slot is unsupported or its combination is illegal.	
MEZ1 Power Fault	An error was detected in power circuit of mezzanine card installed in Type 1 slot of CPU blade.	Check installation status of mezzanine card. If the same error persists, contact your service representative.
MEZ2 Power Fault	An error was detected in power circuit of mezzanine card installed in Type 2 slot of CPU blade.	
IOH Thermal Trip	Forced power-off occurred due to a thermal error in chipset on CPU blade.	Check installation status of the heat sink on the CPU blade. Check if fans in Blade Enclosure work normally. Refer to the User's Guide of the Blade Enclosure to make sure that the sufficient number of fans are installed in correct locations. Check if the fans and CPU blades are installed in correct locations. Check if the ambient temperature of installation location satisfies the operation guarantee condition. If the same error persists, contact your service representative.
Proc1ThermalTrip	Forced power-off occurred due to a thermal error in CPU#1.	
Proc2ThermalTrip	Forced power-off occurred due to a thermal error in CPU#2.	
Proc1 Therm % 09	A high temperature error was detected in CPU #1.	
Proc2 Therm % 09	A high temperature error was detected in CPU #2.	
CPUx_DIMMyTemp09	A high temperature error was detected in DIMM. x denotes CPU number, and y denotes DIMM slot number.	
AmbientTempAlm09	A high temperature error was detected in CPU blade.	

On-screen message	Description	Action
AmbientTempAlm02	A low temperature error was detected in CPU blade.	Check if the ambient temperature of installation location satisfies the operation guarantee condition. If the same error persists, contact your service representative.
P1 VCCP Alm XX P1 VTT Alm XX P1 VDDQ Alm XX P1 DDR_VTT AlmXX P2 VCCP Alm XX P2 VTT Alm XX P2 VDDQ Alm XX P2 DDR_VTT AlmXX BB +1.1v Alm XX BB +1.5v Alm XX BB +1.8v Alm XX BB +3.3v Alm XX BB +5v Alm XX BB +0.9vs Alm XX BB +1.1vs Alm XX BB +1.8vs Alm XX BB +3.3vs Alm XX BB +5vs Alm XX BB +12vs Alm XX Battery Alm XX	A voltage alarm was detected. XX=09: Upper limit alarm XX=02: Lower limit alarm	Contact your service representative.

Virtual LCD indications when STATUS lamp is flashing in amber

On-screen message	Description	Action
Mem Reconfigured	The failing memory is forcedly used, or the memory is degraded.	Check installation status of DIMM. If the same error persists, contact your service representative.
Mem Err Disable	Correctable memory error frequently occurs.	
CPU Reconfigured	The failing CPU is forcedly used.	Check installation status of CPU. If the same error persists, contact your service representative.
HDD X Fault	An error was detected in hard disk drive installed in CPU blade. X: Indicates slot number containing the failing hard disk drive with 0-origin number.	Contact your service representative.
E-Keying Error	In the Blade Enclosure, combination of installation locations of CPU blade, mezzanine card, and switch module is not correct. Thus, an unconformity of interface signal was detected and the CPU blade failed to power on.	Refer to the User's Guide of Blade Enclosure for correct installation locations. If the same error persists, contact your service representative.

On-screen message	Description	Action
Location Error	In the Blade Enclosure, the installation location of CPU blade is incorrect, or the installation locations of the fan and CPU blade are incorrect. Thus, the CPU blade failed to power on.	Refer to the User's Guide of Blade Enclosure to check if the CPU blade is installed in correct location. Check the installation locations of the fan and CPU blade. If the same error persists, contact your service representative.
Cooling Error	In the Blade Enclosure, the number of fans installed is insufficient or the installed fan is faulty. Thus, the CPU blade failed to power on due to insufficient cooling power.	Check if the heat sink is installed correctly on CPU blade. Check if fans in Blade Enclosure work normally. Refer to the User's Guide of the Blade Enclosure to make sure that the sufficient number of fans are installed in correct locations. Check if the fans and CPU blades are installed in correct locations. Check if the ambient temperature of installation location satisfies the operation guarantee condition. If the same error persists, contact your service representative.
Proc1 Therm % 07	A high temperature warning was detected in CPU #1.	
Proc2 Therm % 07	A high temperature warning was detected in CPU #2.	
CPUx_DIMMyTemp07	A high temperature warning was detected in DIMM. x, y: Indicates location of DIMM slot.	
AmbientTempAlm07	A high temperature warning was detected in CPU blade.	
AmbientTempAlm00	A low temperature warning was detected in CPU blade.	Check if the ambient temperature of installation location satisfies the operation guarantee condition. If the same error persists, contact your service representative.
P1 VCCP Alm XX P1 VTT Alm XX P1 VDDQ Alm XX P1 DDR_VTT AlmXX P2 VCCP Alm XX P2 VTT Alm XX P2 VDDQ Alm XX P2 DDR_VTT AlmXX BB +1.1v Alm XX BB +1.5v Alm XX BB +1.8v Alm XX BB +3.3v Alm XX BB +5v Alm XX BB +0.9vs Alm XX BB +1.1vs Alm XX BB +1.8vs Alm XX BB +3.3vs Alm XX BB +5vs Alm XX BB +12vs Alm XX Battery Alm XX	A voltage warning was detected on CPU blade. XX=07: Upper limit warning XX=00: Lower limit warning	Contact your service representative.

LAN (1 - 2) Link/Access Lamps

The lamp goes on when LAN port is connected to the network. The lamp blinks when data is being transmitted. When the CPU blade is powered on and the LAN cable is connected, the lamp on LAN port for which the link is being established goes on. The connection of LAN port is physically controlled by the EM card and the switch module installed in the Blade Enclosure.

To check connection status of LAN port, refer to the User's Guide of the EM card and the switch module installed in the Blade Enclosure.

ID Lamp

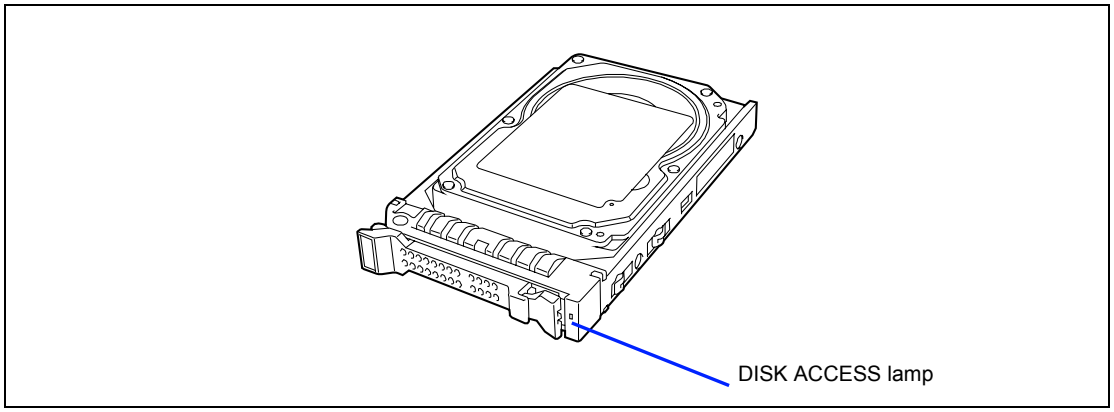
Pressing the ID switch brings the lamp to light, and pressing again brings the lamp to go off. The ID lamp is intended to identify a specific CPU blade in the system in which more than one CPU blade is installed. Making this lamp being lit can help the maintenance work to identify the faulty device.

If you press the ID switch, the lamp goes on. When the recognize command is received from management software such as NEC ESMPRO Manager, the lamp blinks.

You may use the remote control feature of EXPRESSSCOPE Engine 2 (BMC) to perform the same operation as using the ID switch on the server.

Hard Disk Drive

A single hard disk drive includes one lamp.



The lamp lights while accessing to a hard disk drive occurs (however, if the hard disk drive is operated in the array configuration using SW RAID, the lamp operates only in the OS boot status). The lamp is lit amber if a hard disk drive cannot be interfaced with the CPU blade correctly due to a hardware fault in the CPU blade or another failure.

In the disk array configuration, the lamp blinks green or amber alternately while the disk array is rebuilt (this does not indicate an error). After the rebuilding completes, the lamp returns to the normal indication. If the rebuilding fails, the lamp is lit amber.

USING YOUR SERVER

This section describes the basic operation of the blade server.

Power-on of Blade Server

There are the following two ways to turn on the power of the CPU blade. Turn on the power of the CPU blade in any of the two ways after turning on the powers of the display unit and peripherals connected to the CPU blade.

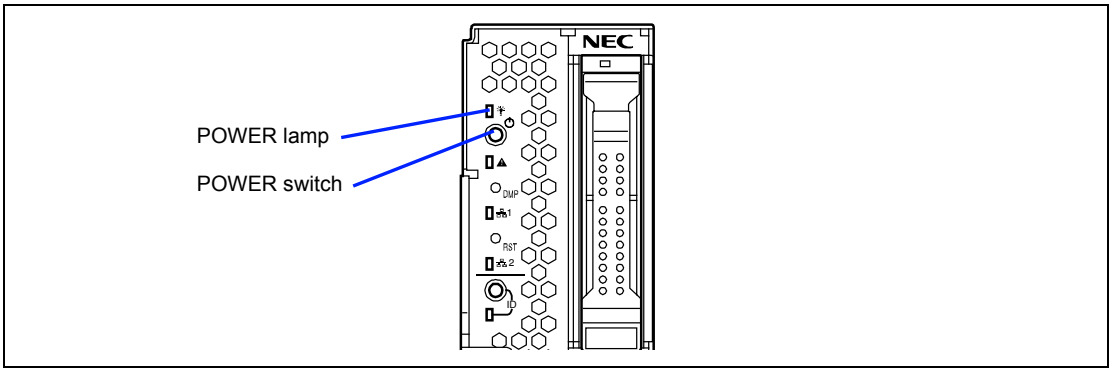
IMPORTANT: Perform the power-on operation of the CPU blade by either the use of the POWER switch or the remote power-on after the period of 30 seconds or longer has passed from the supply of AC power to every power unit. The power-on operation within the period of 30 seconds from the supply of AC power to every power unit may not turn on the power of the CPU blade. If so, turn on the power of the CPU blade by using the POWER switch after making sure that the AC power is supplied to every power unit.

NOTES:

- If a power cord on the Blade Enclosure is connected to a power controller including an uninterruptible power supply (UPS), make sure that the power of the power controller is turned on.
- When the power is supplied to the server, the initial diagnosis is executed for about 30 seconds. In this period, the POWER switch is disabled. Power on the server about 30 seconds immediately after you installed the CPU blade or turned on the server.

Power ON from CPU Blade

Press the POWER switch on the panel of the CPU blade (the POWER lamp on the CPU blade goes on green).



Power ON from Network Serial Port

Depending on the BIOS setting of the CPU blade, the power of the CPU blade may be automatically turned on by a proper packet received from the network or via the modem connected to the serial port.

This power-on procedure can be specified by setting [Wake On Events] of [System Hardware] in the BIOS SETUP Utility.

Power ON from Remote Console

The power of the CPU blade can be turned on by using remote control feature of EXPRESSSCOPE Engine 2 (BMC).

Operation after Power ON

If the CPU blade is connected with a display unit, the NEC logo appears on the screen of the display unit after a while from the power-on.

While the NEC logo appears, the CPU blade runs the self-diagnosis program (POST) to diagnose the CPU blade itself. See "POST" described later for details. At the completion of POST, OS is booted.

> **NOTE:** If a fault is found during POST, it is interrupted and the error message notifying the fault appears. See Chapter 8.

Power-off of Blade Server

There are the following three ways to turn off the power of the CPU blade.

1. Power-off by OS shutdown
2. Power-off from CPU Blade

   Press the POWER switch on the panel of the CPU blade
3. Power-off from Remote Console

   The power of the CPU blade can be turned off by using "OS Shutdown" in remote control feature of EXPRESSSCOPE Engine 2 (BMC).

   The POWER lamp on the CPU blade of which power was turned off goes on amber.

> **NOTE:** To power-off from CPU blade or remote console, the OS must be set so that it starts shutdown process when the POWER switch on the CPU blade is pressed.

POST

POST (Power On Self-Test) is the self-diagnostic program stored in the CPU blade.

When you power on the CPU blade, the system automatically runs POST to check the mother board, ECC memory module, CPU module, keyboard, and mouse. POST also displays messages of the BIOS SETUP utility, such as the start-up message, while in progress.

With the factory setup of the CPU blade, the NEC logo appears on the display unit (if connected) while POST is in progress. To display the POST check results, press **Esc**.

> **NOTE:** You can set the POST check results to appear on the display unit without pressing **Esc**. To do so, select "Enabled" for "Boot-time Diag Screen" under the Advanced menu of the BIOS SETUP utility. See Chapter 4 for details.

You don't always need to check the POST check results. Check messages that POST displays when:

- you use the blade server for the first time.
- the server appears to fail.
- an error message appears on the display unit.

POST Execution Flow

The following describes the progress of POST in the chronological order.

IMPORTANT:

- Do not make unnecessary key entries or perform mouse operations while POST is in progress.
- Some system configurations may display the message "Press Any Key" to prompt a key entry. This message is driven by BIOS of an installed optional board. Make sure to read the manual that comes with the optional board before any key entry.
- Powering on the server, after you installed or removed an optional mezzanine card, may display the message that indicates incorrect board configuration and suspend POST.
  In such a case, press **F1** to continue POST. Board configuration can be made using the utility described later.

1. After a few seconds from power-on, POST starts checking the memory. The count message of the basic and expansion memory appears on the screen of the display unit (if connected). The memory check may takes a few minutes to complete depending on the memory size of the CPU blade. Also, it may take approximately one minute for the screen display to appear after rebooting the CPU blade.
2. Some messages appear upon completion of the memory check. These messages appear to indicate that the system has detected the CPU and other devices installed.
3. After a few seconds, POST displays the following message prompting you to launch the BIOS setup utility, SETUP, stored in the system memory of the CPU blade. This message appears at bottom left on the screen.

   ```
   Press <F2> to enter SETUP
   ```

   Launch the BIOS SETUP utility when you need to change the settings to meet the requirements for the CPU blade. As long as the above message is not displayed with an error message, you don't have to launch the utility. (Ignore the message. POST will automatically proceed.)

   To launch the SETUP utility, press **F2** while the above message is displayed. See Chapter 4 for setup and parameters.

   The CPU blade automatically restarts POST all over again when you exit the SETUP utility.
4. If the server has an optional board installed, POST displays the board information on the screen.

   Refer to the manual supplied with the board for details.

   POST will automatically proceed a few seconds later.

5. If you have set the password using the BIOS SETUP utility, the password entry screen appears upon successful completion of POST.

   Up to three password entries will be accepted. Three incorrect password entries disable the system to boot. In such a case, turn off the power and wait about 30 seconds before turning on to boot the CPU blade.

   IMPORTANT: Do not set a password before installing an OS.

6. The OS starts when POST completes.

POST Error Messages

When POST detects an error, it displays an error message on the screen. See Chapter 8 for POST error codes.

IMPORTANT: Take a note on the messages displayed before consulting with your service representative. Alarm messages are useful information for maintenance.

Device Identification

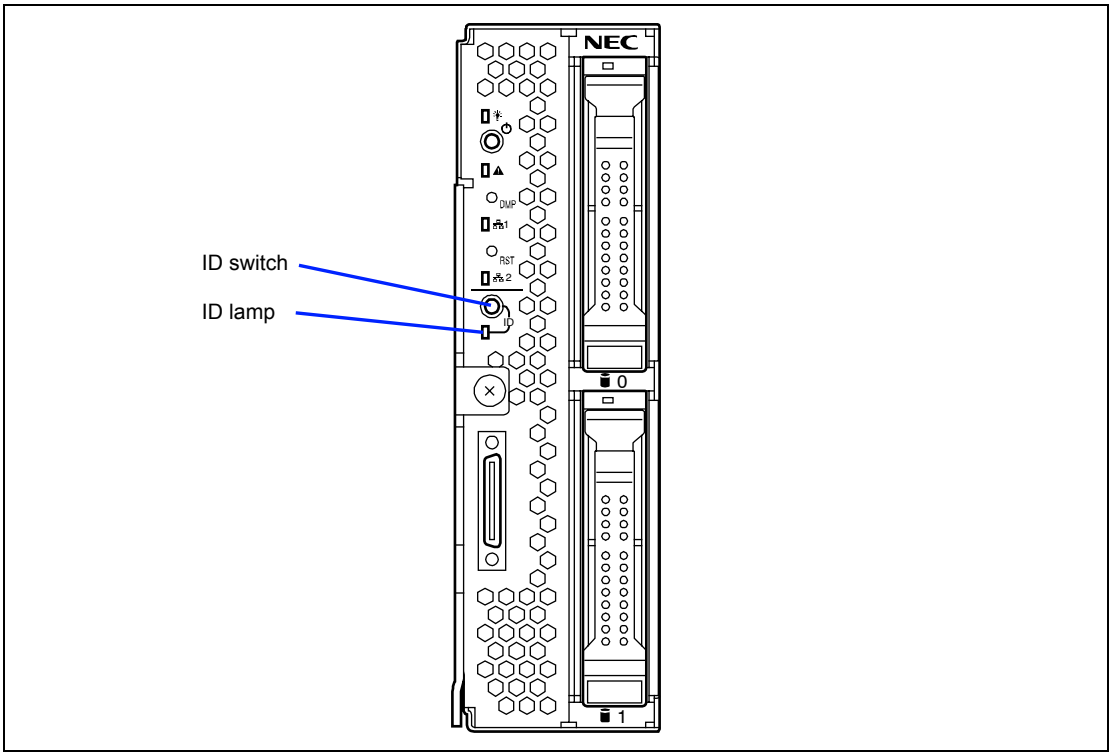
To identify the device to be maintained among more than one device, ID lamp is used.

The ID lamp is located on the CPU blade installed in the Blade Enclosure.

The ID lamp allows you to identify the device subject to maintenance among more than one CPU blade installed in the Blade Enclosure.

The ID lamp on CPU blade can also be made blink blue by proper software commands from the management PC on the network. In addition, pressing the ID switch on the CPU blade brings the ID lamp to light.

You may use the remote control feature of EXPRESSSCOPE Engine 2 (BMC) to perform the same operation as using the ID switch on the CPU blade.



Chapter 3

Setting Up Your Server

This chapter describes how to set up the server appropriate for your system, on a step-by-step basis.

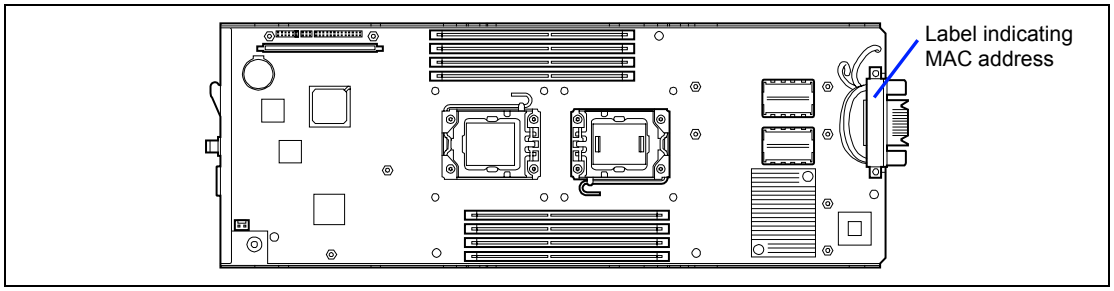
BEFORE INSTALLING CPU BLADE

Be sure to check the MAC addresses before installing a CPU blade in the Blade Enclosure.

Check of MAC Address

A MAC address indicates the address specific for the network. It is expressed by 12-digit alphanumeric starting with "003013". A CPU blade has two MAC addresses. Check the MAC addresses before installing a CPU blade in the Blade Enclosure.

A MAC address is indicated in the area as shown in the figure below.



The address of LAN port depends on the numeral and alphabet of the last digit of MAC address.

- When the numeral/alphabet of the last digit is even number, A, C, or E:
  The MAC address for LAN port 1 is as described on the label.
  The MAC address for LAN port 2 can be obtained by adding 1 to the described MAC address.
- When the numeral/alphabet of the last digit is odd number, B, D, or F:
  The MAC address for LAN port 1 can be obtained by adding 1 to the described MAC address.
  The MAC address for LAN port 2 can be obtained by adding 2 to the described MAC address.

The MAC addresses can be checked from the proper Windows or Linux command.

- Windows
  Enter "ipconfig /all" for the MS-DOS prompt or from [Run] in the Start menu to see the indicated physical address part.
- Linux
  Enter "ifconfig" for the prompt to see the indicated "Hwaddr".

You may use the remote control feature of EXPRESSSCOPE Engine 2 (BMC) to check the MAC address.

Installing DIMM

If your CPU blade is not equipped with memory device, install DIMMs according to Chapter 9.

INSTALLING THE CPU BLADE

Install the CPU blade in the dedicated Blade Enclosure. Refer to the User's Guide of Blade Enclosure for how to install the CPU blade.

IMPORTANT: The CPU blade is extremely sensitive to static electricity. Make sure to touch the metal frame of the CPU blade to discharge static electricity from your body before handling the CPU blade. Do not touch the pins, leads, or circuitry and place the CPU blade directly on the desk. For static notes, see "Anti-static Measures" in Chapter 9.

INSTALLING THE HARD DISK DRIVE

Install a hard disk drive according to the procedure described in Chapter 9.

IMPORTANT:

- The hard disk drive is extremely sensitive to static electricity. Make sure to touch the metal frame of the CPU blade to discharge static electricity from your body before handling the hard disk drive. Do not touch the pins, leads, or circuitry and place the hard disk drive directly on the desk. For static notes, see "Anti-static Measures" in Chapter 9.
- Some hard disk drive may contain operating system. Strict care must be taken when handling it.
- Handle the hard disk drive carefully so that the hard disk drive may not be given excess shocks and vibrations.

MAKING CONNECTIONS

Connect peripheral devices to the CPU blade.

IMPORTANT:

- Contact the maintenance engineer in your service representative if you have any requests on the system configuration including the connection to the uninterruptible power supply system or auto power controller and the time schedule operation.
- If you are installing the CPU blade in the Blade Enclosure (SIGMABLADE), follow instructions described in the User's Guide of the Blade Enclosure.

⚠ WARNING

Observe the following instructions to use the server safely. Failure to follow these instructions may result in death or serious personal injury. See pages 1-2 to 1-6 for details.

- Do not hold the power plug with a wet hand.
- Do not connect earth lines to any gas tubes.

⚠ CAUTION

Observe the following instructions to use the server safely. Failure to follow these instructions may cause a fire, personal injury, or property damage. See pages 1-2 to 1-6 for details.

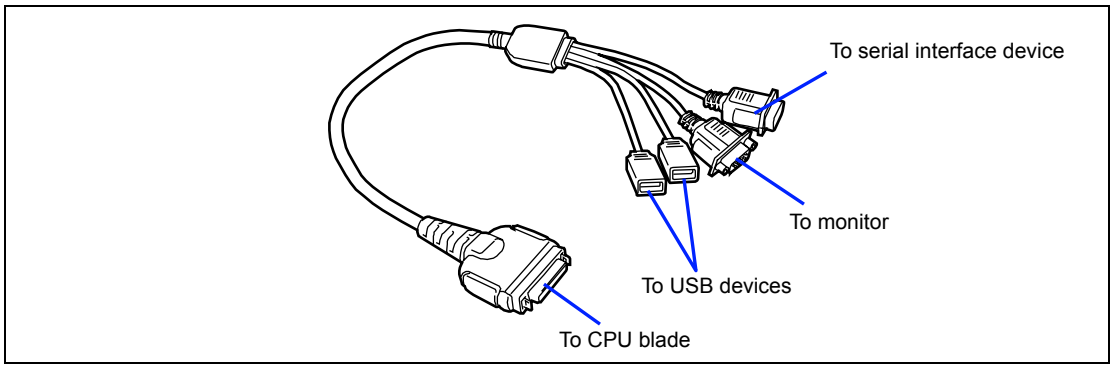
- Do not plug the power cord in to an improper power source.
- Do not connect the power cord to an outlet that has an illegal number of connections.
- Insert the power plug into the outlet as far as it goes.
- Use the authorized power cord only.
- Do not connect or disconnect any interface cable with the power cord of the server plugged to a power source.
- Do not use any unauthorized interface cable.

In the ordinary operation, any cables may not be connected to a CPU blade. Proper cable(s) should be connected to the USB, serial, and/or VGA ports on the CPU blade in the following cases:

- Installing OS (when the CPU blade is installed in the Blade Enclosure (SIGMABLADE-H))
- Maintenance
- Updating BIOS and firmware

The K410-150(00) SUV cable is a standard accessory for the Blade Enclosure (SIGMABLADE).

The K410-150(00) SUV cable has the USB, serial interface, and monitor connection connectors at the other ends. Connect a proper device at each of the ends.

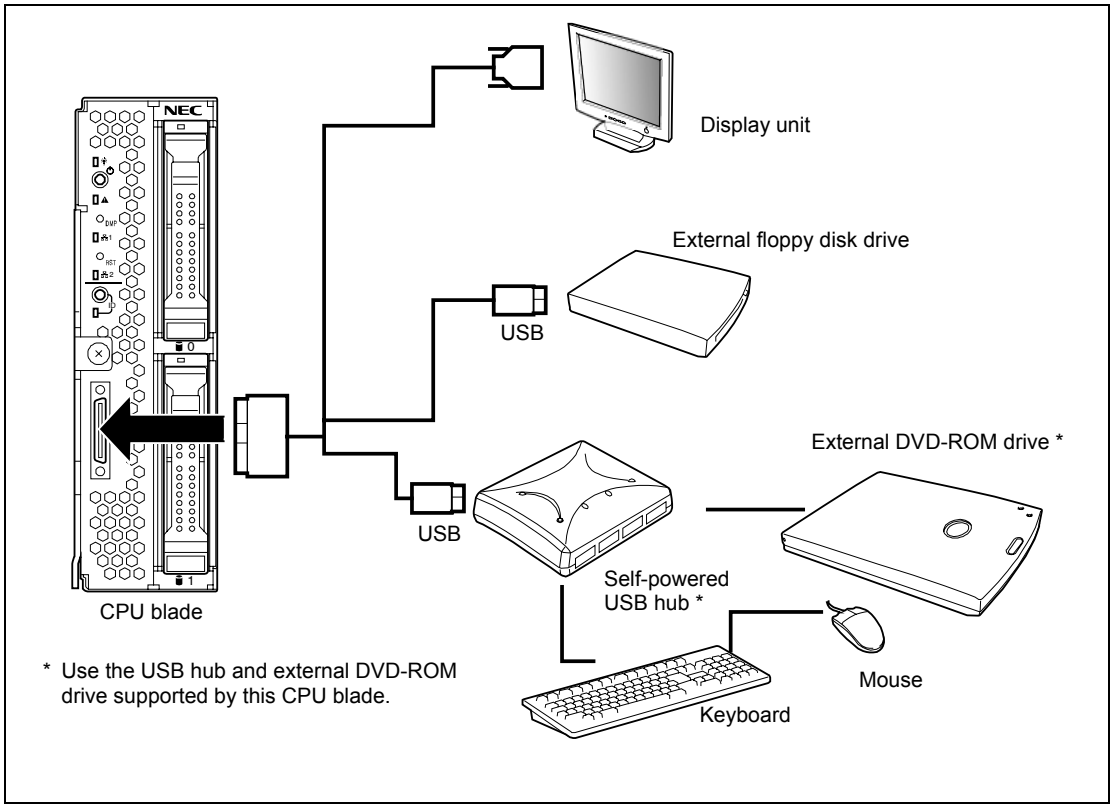


IMPORTANT:

- To connect a peripheral or interface cable provided by a vendor other than NEC (or third party) to the CPU blade, make sure that the device is available for the CPU blade. Some third party devices are not available for the CPU blade.
- The serial port connector cannot be directly connected with the leased line.
- Do not connect/disconnect the SUV cable or add/remove the USB device until the operating system starts running.
  To connect/disconnect the SUV cable or add/remove the USB device after OS startup, follow restrictions of operating system.
  If the device having serial interface is connected, first power off the CPU blade and destination device, and remove the power cord from the destination device before connecting/disconnecting SUV cable or serial cable. Failure to follow it may cause the devices to be defected due to the potential difference between them.
- If the CPU blade is installed in the Blade Enclosure (SIGMABLADE-H) and you are going to install an OS in it, use the SUV cable. See the next page for connection.

USB Connection by K410-150(00) SUV Cable

Connect the floppy disk drive, DVD-ROM drive, keyboard, and mouse according to the figure shown below.



Network

The CPU blade is connected with network via the Blade Enclosure. Refer to the User's Guide of the Blade Enclosure for details.

Chapter 4

Configuring Your Server

This chapter describes Basic Input Output System (BIOS) configuration.

When you install the blade server for the first time or install/remove optional devices, thoroughly read this chapter for better understanding and correct setups.

SYSTEM BIOS ~ SETUP ~

The SETUP utility is provided to make basic hardware configuration for the CPU blade. This utility is pre-installed in the flash memory of the CPU blade and ready to run.

The CPU blade is configured with the correct parameters using the SETUP utility and shipped in the best conditions. Thus, you don't need to use the SETUP utility in most cases. However, you might wish to use the SETUP utility in the cases described below.

IMPORTANT:

- The SETUP utility is intended for system administrator use only.
- The SETUP utility allows you to set a password. The CPU blade is provided with two levels of password: Supervisor and User. With the Supervisor password, you can view and change all system parameters of the SETUP utility. With the User password, system parameters available for viewing and changing are limited.
- Do not set any password before installing the OS.
- The CPU blade contains the latest version of the SETUP utility. Dialog boxes appear on your SETUP utility, thus, may differ from descriptions in this manual. If you find anything unclear, see the online help or ask your sales representative.

Starting SETUP Utility

Powering on the CPU blade starts POST (Power On Self-Test) and displays its check results. If the NEC logo is displayed, press **Esc**.

After a while, the following message appears at bottom left on the screen.

```
Press <F2> to enter SETUP
```

Press **F2** to start the SETUP utility and display its Main menu.

If you have previously set a password with the SETUP utility, the password entry screen appears. Enter the password.

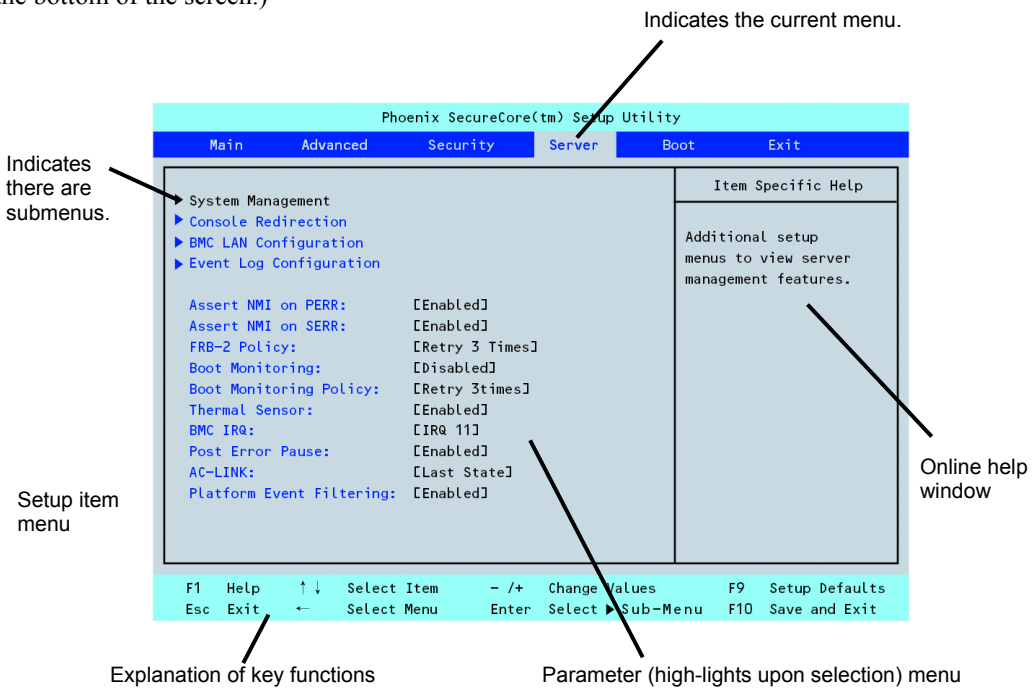
```
Enter password:[                ]
```

Up to three password entries will be accepted. If you fail to enter the password correctly for three consecutive times, the CPU blade halts. (You can no longer proceed.) Power off the CPU Blade.

NOTE: The CPU blade is provided with two levels of password: Supervisor and User. With the Supervisor password, you can view and change all system parameters. With the User password, system parameters available for viewing and changing are limited.

Description on On-Screen Items and Key Usage

Use the following keyboard keys to work with the SETUP utility. (Key functions are also listed at the bottom of the screen.)


Indicates the current menu.
Indicates there are submenus.
Phoenix SecureCore(tm) Setup Utility
Main Advanced Security Server Boot Exit
System Management
Console Redirection
BMC LAN Configuration
Event Log Configuration
Assert NMI on PERR: [Enabled]
Assert NMI on SERR: [Enabled]
FRB-2 Policy: [Retry 3 Times]
Boot Monitoring: [Disabled]
Boot Monitoring Policy: [Retry 3times]
Thermal Sensor: [Enabled]
BMC IRQ: [IRQ 11]
Post Error Pause: [Enabled]
AC-LINK: [Last State]
Platform Event Filtering: [Enabled]
Item Specific Help
Additional setup menus to view server management features.
F1 Help ↑ ↓ Select Item - /+ Change Values F9 Setup Defaults
Esc Exit ← Select Menu Enter Select ▶ Sub-Menu F10 Save and Exit
Online help window
Setup item menu
Explanation of key functions
Parameter (high-lights upon selection) menu

Cursor (↑, ↓):	Selects an item on the screen. The highlighted item is currently selected.
Cursor (←, →):	Selects the Main, Advanced, Security, Server, Boot, or Exit menu.
– and **+**:	Changes the value (parameter) of the selected item. When a submenu option (an option preceded by "➤") is selected, these keys are disabled.
Enter:	Press **Enter** to select (determine) parameters.
Esc:	Displays the previous screen.
F1:	Press **F1** when you need help on SETUP operations. The help screen for SETUP operations appears. Press **Esc** to return to the previous screen.
F9:	Sets the parameter of the currently displayed item back to the factory set parameter.
F10:	Save and exit the SETUP utility.

Menu and Parameter Descriptions

The SETUP utility has the following six major menus:

- Main
- Advanced
- Security
- Server
- Boot
- Exit

To set minute functions, select a submenu from the above menus. The following describes available functions and parameters, as well as the factory-set, for each menu.

Main

Option	Parameter	Description	Your Setting
System Time	HH:MM:SS	Set the system time.	
System Date	MM/DD/YYYY	Set the system date.	
Hard Disk Pre-Delay	[Disabled] 3 seconds 6 seconds 9 seconds 12 seconds 15 seconds 21 seconds 30 seconds	When accessing the internal SATA hard disk drive for the first time during POST, the system waits for the specified time until the drive becomes ready.	
Processor Settings	Select submenu	Shows the processor settings submenu.	

[ ]: Factory-set

IMPORTANT: Check and adjust the system clock before the operation if any of the following conditions is applicable.

- After carriage of device
- After storage of device
- After the device is entered into the pause state under the environmental condition enduring device operation (temperature: 10°C - 35°C, humidity: 20% - 80%)

Check the system clock at the rough rate of once per month. When the system clock is installed in a system requiring high time precision, it is recommended to use a time server (NTP server).

If the system clock is remarkably delayed or advanced as the passage of time in spite of adjustment, contact your service representative for maintenance.

Processor Settings

Option	Parameter	Description	Your Setting
Processor Speed Setting	nnn GHz	Displays clock speed for the processor. (View only)	
Processor 1 CPUID	Numeral Disabled Not Installed Error	Displays CPU ID for processor, if present. "Disabled" indicates that the processor is defected. "Not Installed" indicates that no processor is installed. "Error" indicates that the processor is forcedly booted. (View only)	
Processor 1 L2 Cache	nnn KB	Displays L2 cache size for processor.	
Processor 1 L3 Cache	nnn KB	Displays L3 cache size for processor.	
Processor 2 CPUID	Numeral Disabled Not Installed Error	Displays CPU ID for processor, if present. "Disabled" indicates that the processor is defected. "Not Installed" indicates that no processor is installed. "Error" indicates that the processor is forcedly booted. (View only)	
Processor 2 L2 Cache	nnn KB	Displays L2 cache size for processor.	
Processor 2 L3 Cache	nnn KB	Displays L3 cache size for processor.	
Active Processor Cores	[ALL] 1	Specifies the number of valid cores in the processor.	
Hyper Threading Technology	[Enabled] Disabled	TBD	
Execute Disable Bit	[Enabled] Disabled	Displayed only when the CPU supports Execute Disable Bit.	
Intel SpeedStep(R) Technology	[Enabled] Disabled	Fixed to "Disabled" if the processor does not support this feature.	
C1 Enhanced Mode	[Enabled] Disabled	Enables or disables the C1 Enhanced Mode.	
Virtualization Technology	[Enabled] Disabled	Enables or disables the Intel(R) virtualization technology.	
Hardware Prefetcher	[Enabled] Disabled	Enables or disables the hardware prefetcher.	
Adjacent Cache Line Prefetch	[Enabled] Disabled	Enables or disables the optimization of an access from memory to cache.	

[ ]: Factory-set

Advanced

Option	Parameter	Description	Your Setting
Memory Configuration	–	Displays Memory Configuration submenu.	
PCI Configuration	–	Displays PCI Configuration submenu.	
Peripheral Configuration	–	Displays Peripheral Configuration submenu.	
Advanced Chipset Control	–	Displays Advanced Chipset Control submenu.	
Boot-time Diagnostic Screen	[Disabled] Enabled	When disabled, the BIOS will display the NEC logo during POST. Press **Esc** to switch to the POST execution screen.	
Reset Configuration Data	[No] Yes	Select "Yes" if you want to clear the system configuration data during the next boot. Automatically reset to "No" in the next boot.	
NumLock	On [Off]	Sets power on Numlock state.	
Memory/Processor Error	[Boot] Halt	If "Halt" is selected, the boot is stopped when POST error occurs.	

[ ]: Factory-set

IMPORTANT: Be sure to take a note of boot priority before selecting "Yes" for [Reset Configuration Data], because the information on boot device will be cleared. Select [Exit Saving Changes] to reboot the system, run BIOS SETUP utility, and provide settings for boot device order again.

Memory Configuration

Option	Parameter	Description	Your Setting
Installed memory	nnn MB	Indicates the total capacity of the basic memory. (View only)	
Available under 4GB	nnnnnnn MB	Indicates the capacity of memory available in the area under 4GB. (View only)	
CPU1_DIMM1-4 Status	Normal Disabled Not installed Error	Indicates the current memory status installed in CPU1_DIMM1 to CPU1_DIMM4. "Normal" indicates the normal status, "Disabled" indicates a memory error, "Not installed" indicates no DIMM installed, and "Error" indicates the system is forcibly started with memory error. (View only).	
CPU2_DIMM1-4 Status	Normal Disabled Not installed Error	Indicates the current memory status installed in CPU2_DIMM1 to CPU2_DIMM4. "Normal" indicates the normal status, "Disabled" indicates a memory error, "Not installed" indicates no DIMM installed, and "Error" indicates the system is forcibly started with memory error. (View only).	
Memory Retest	[No] Yes	Causes BIOS to retest all memory on the next boot.	
Extended RAM Step	1MB 1KB Every location [Disabled]	"1MB" indicates that the memory test is done in the unit of 1MB. "1KB" indicates that the memory test is done in the unit of 1KB. "Every location" tests every memory location. "Disabled" indicates that only memory initialization is done. Only pressing **Space** is acceptable to suspend the test during the memory test.	
Memory RAS Mode	[Independent] Mirror Lock Step	Specifies the memory RAS mode. See "DIMM" in Chapter 9 for details.	
NUMA configuration	[Disabled] Enabled	Disables or enables Non-Uniform Memory Access feature.	

[ ]: Factory-set

PCI Configuration

Option	Parameter	Description	Your Setting
Mezzanine Slot #1-2 Option ROM Scan	Enabled [Disabled]	Indicates whether the expansion of BIOS of mezzanine card to be installed is enabled or disabled.	
PXE/iSCSI Select	[PXE] iSCSI	Specify PXE or iSCSI to boot the mezzanine card to be installed.	

[ ]: Factory-set

IMPORTANT: An option [PXE/iSCSI Select] is displayed only when the mezzanine card that supports iSCSI standard is installed.

Onboard SCSI

Option	Parameter	Description	Your Setting
Option ROM Scan	[Enabled] Disabled	Indicates whether the expansion of BIOS of RAID controller is enabled or disabled.	

[ ]: Factory-set

IMPORTANT: This menu appears only when N8403-026 RAID controller is installed.

Onboard LAN

Option	Parameter	Description	Your Setting
LAN Port #1 - 2 Option ROM Scan	[Enabled] Disabled	Indicates whether the expansion of BIOS of on-board LAN controller is enabled or disabled.	

[ ]: Factory-set

Peripheral Configuration

IMPORTANT:

- Note that the interrupt and/or base I/O address are not overlapped with others. If the value set for the interrupt or base I/O address is used in another resource, the yellow asterisk (*) appears. Reset any item with the yellow asterisk properly.
- If N8403-026 RAID controller is installed, "Serial ATA", "SATA Controller Mode Option", "SATA AHCI", and "SATA RAID" are not displayed.

Option	Parameter	Description	Your Setting
Serial Port B	Disabled [Enabled]	Selects whether serial port B is enabled or disabled.	
Base I/O address	3F8 [2F8] 3E8 2E8	Selects the base I/O address for serial port A.	
Interrupt	[IRQ 3] IRQ 4	Selects the interrupt for a serial port A.	
Serial ATA	Disabled [Enabled]	Selects whether the serial ATA is enabled or disabled.	
SATA Controller Mode Option	Compatible [Enhanced]	Selects an operation mode of onboard SATA controller. Displayed only when Serial ATA is enabled. Compatible mode: SATA drives are automatically detected and recognized as legacy mode. Enhanced mode: SATA drives are automatically detected and recognized as native mode.	
SATA AHCI	Disabled [Enabled]	Selects whether AHCI (Advanced Host Controller Interface) is enabled or disabled. This item appears only when "SATA RAID" is set to "Disabled".	
SATA RAID	Disabled [Enabled]	Selects whether RAID feature of onboard SATA controller is enabled or disabled.	

[ ]: Factory-set

Advanced Chipset Control

Option	Parameter	Description	Your Setting
Multimedia Timer	Disabled [Enabled]	Specify whether the system supports the multimedia timer feature.	
Intel(R) I/O AT	Disabled [Enabled]	Enables or disables the Intel(R) Acceleration technology.	
Intel(R) VT-d	Disabled [Enabled]	Specify whether the Intel(R) Virtualization Technology for Directed I/O feature is enabled or disabled. This item appears only when the processor supports this feature.	
Wake On LAN/PME	Disabled [Enabled]	Specify whether the remote power-on feature through the device connected to the standard network card or expansion slot card is enabled or disabled. To use Wake On LAN feature, set the link speed and duplex to [Auto].	
Wake On Ring	[Disabled] Enabled	Specify whether the remote power-on function through a serial port is enabled or disabled.	
Wake On RTC Alarm	[Disabled] Enabled	Specify whether the remote power-on function by using RTC alarm feature is enabled or disabled.	

[ ]: Factory-set

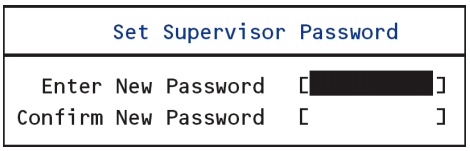
IMPORTANT:

- If the AC power is turned off while the Wake On Ring feature is enabled, this feature is disabled at the next system boot after AC power-on. You need to press the Power switch to boot the system. If the AC power is turned off, Wake On Ring feature on power management chip is disabled until the next DC power-on.
- To use this feature on Windows Server 2003, see Chapter 8 "Problems with Windows Server 2003".

Security

The Security menu appears if you move the cursor to the position of "Security."

Press **Enter** on "Set Supervisor Password" or "Set User Password," to display the following screen.



Enter the passwords on the dialog box. Passwords may have up to eight characters including alphanumerics and symbols.

IMPORTANT:

- User password can be set only when Supervisor password is already set.
- Set the passwords only after OS is installed.

See the table below for the items.

Option	Parameter	Description	Your Setting
Security Chip Configuration	–	Security Chip Configuration submenu is displayed.	
Supervisor Password Is	Clear Set	Status only, user cannot modify. Once set, this can be disabled by setting it to a null string, or by clearing password jumper on system board (see Configuring Mother Board Jumpers in this Chapter).	
User Password Is	Clear Set	Status only, user cannot modify. Once set, this can be disabled by setting it to a null string, or by clearing password jumper on system board (see Configuring Mother Board Jumpers in this Chapter).	
Set Supervisor Password	Up to eight alphanumerics	When the <Enter> key is pressed, the user is prompted for a password; press ESC key to abort. Once set, this can be disabled by setting it to a null string, or by clearing password jumper on system board (refer to Configuring Mother Board Jumpers in this chapter).	

Option	Parameter	Description	Your Setting
Set User Password	Up to eight alphanumerics	Supervisor password controls access to the setup utility. When Enter is pressed, the user is prompted for a password; press **Esc** to abort. Once set, this can be disabled by setting it to a null string, or by clearing password jumper on system board (refer to Configuring Mother Board Jumpers in this chapter).	
Password on boot	[Disabled] Enabled	Disables or enables password entry on boot.	
Fixed disk boot sector	[Normal] Write Protect	Will write protect the boot sector of the hard drive to prevent viruses from corrupting the drive under DOS if set to write protect.	
Power Switch Inhibit	[Disabled] Enabled	Enables or disables the POWER switch mask feature. If "Enabled" is selected, power-off with the POWER switch becomes unavailable after OS boot-up. (Forced shut down feature is always acceptable to the server. Forced shut down is a feature to shut down by pressing the POWER switch for at least four seconds.)	

[ ]: Factory-set

Security Chip Configuration Submenu

Option	Parameter	Description	Your Setting
TPM Support	Disabled [Enabled]	Disables or enables TPM feature.	
Current TPM State	–	Displays the current TPM state.	
Change TPM State	[No Change] Enable & Activate Deactivate & Disable Clear	Changes TPM state. (This option can be selected only when the supervisor password is set.)	

[ ]: Factory-set

IMPORTANT: If you select any parameter except for [No Change] to change TPM State, a confirmation screen as shown below appears at the end of POST after restarting the system. Select [Execute] on the confirmation screen to determine the change you have made.

When [Enable & Activate] is selected:

```
Physical Presence operations

TPM configuration change was requested to
State:     Enable & Activate

Note:
This section will switch on the TPM

Reject
Execute
```

When [Deactivate & Disable] is selected:

```
Physical Presence operations

TPM configuration change was requested to
State:     Deactivate & Disable

Note:
This action will switch off the TPM

                    WARNING!!!
Doing so might prevent security applications
that rely on the TPM from functioning
as expected

Reject
Execute
```

When [Clear] is selected:

```
Physical Presence operations

TPM configuration change was requested to
State:     Clear

                    WARNING!!!
Clearing erases information stored on the TPM.
You will lose all created keys and access to
data encrypted by these keys.

Reject
Execute
```

Server

Option	Parameter	Description	Your Setting
System Management	–	System Management submenu is displayed.	
Console Redirection	–	Console Redirection submenu is displayed.	
BMC LAN Configuration	–	BMC LAN Configuration submenu is displayed.	
Event Log Configuration	–	Event Log Configuration submenu is displayed.	
Assert NMI on PERR	Disabled [Enabled]	Specify whether to support PCI PERR or not.	
Assert NMI on SERR	Disabled [Enabled]	Specify whether to support PCI SERR or not.	
FRB-2 Policy	Disable FRB2 Timer [Retry 3 Times] Always Reset	Set the FRB level 2 timer.	
Boot Monitoring	[Disabled] 5 Minutes 10 minutes 15 minutes 20 minutes 25 minutes 30 minutes 35 minutes 40 minutes 45 minutes 50 minutes 55 minutes 60 minutes	Specify whether to enable or disable the boot monitoring function on booting, or select the time limit for timeout. To use this function, install NEC ESMPRO Agent. Set this item to "Disabled" if the system is booted from OS without installation of NEC ESMPRO Agent.	
Boot Monitoring Policy	[Retry 3 Times] Always Reset	Specify the processing at the occurrence of timeout during boot monitoring. If [Retry 3 times] is selected, the system is reset after the occurrence of timeout and OS boot is retried up to three times. If [Always Reset] is selected, the system is reset after the occurrence of timeout and OS boot is retried repeatedly. * If no service partition exists in the system, OS boot is retried repeatedly from the system partition.	
Thermal Sensor	Disabled [Enabled]	Specify whether to enable or disable the thermal sensor monitoring function. If a thermal error is detected with this item being set to "Enabled", the system stops at the end of POST.	
BMC IRQ	Disabled [IRQ 11]	Determines routing of the BMC interrupt.	

Option	Parameter	Description	Your Setting
Post Error Pause	Disabled [Enabled]	Specify whether to stop the POST once at the end of POST if an error occurs during the POST.	
AC-LINK	Stay Off [Last State] Power On	Specify the state of power when the AC power to the server is turn off once and then on.	
Platform Event Filtering	Disabled [Enabled]	Specify whether to enable or disable the platform event filtering (PEF) feature.	

[ ]: Factory-set

IMPORTANT: To power on the server from the UPS (Uninterruptible Power Supply), select [Server] - [AC LINK] - [Power On].

The table below shows the operation when the AC power to the server is turn off once and then on again, depending on the setting of "AC LINK."

System status before AC power off	Setting of AC LINK		
	Stay Off	Last State	Power On
Operating	Off	On	On
Aborting (DC power being off also)	Off	Off	On
Forced shutdown	Off	Off	On

* Press the power switch continuously for four seconds or longer. This forcibly turns off the power.

System Management Submenu

Option	Parameter	Description	Your Setting
BIOS Revision	–	Displays the current BIOS revision. (View only)	
Board Part Number	–	Displays the part number of mother board. (View only)	
Board Serial Number	–	Displays the serial number of mother board. (View only)	
System Part Number	–	Displays the part number of the system. (View only)	
System Serial Number	–	Displays the serial number of the system. (View only)	
Chassis Part Number	–	Displays the part number of the chassis. (View only)	
Chassis Serial Number	–	Displays the serial number of the chassis. (View only)	
Onboard LAN1 MAC Address	–	Displays the MAC address of the onboard LAN port 1. (View only)	
Onboard LAN2 MAC Address	–	Displays the MAC address of the onboard LAN port 2. (View only)	
Management LAN MAC Address	–	Displays the MAC address of the management LAN port. (View only)	
BMC Device ID	–	Displays BMC device ID. (View only)	
BMC Device Revision	–	Displays BMC device revision. (View only)	
BMC Firmware Revision	–	Displays BMC firmware revision. (View only)	
SDR Revision	–	Displays revision of the sensor data record.	
PIA Revision	–	Displays revision of the platform information area. (View only)	

[ ]: Factory-set

Console Redirection Submenu

Option	Parameter	Description	Your Setting
BIOS Redirection Port	[Disabled] Serial Port A Serial Port B	Specify the address/interrupt of the serial port to which a remote console is connected.	
Baud Rate	9600 [19.2K] 38.4K 57.6K 115.2K	Specify the baud rate used for the interface with successive remote consoles.	
Flow Control	None Xon/Xoff [CTS/RTS] CTS/RTS+CD	Specify the flow control method.	
Terminal Type	PC ANSI [VT100+] VT-UTF8	Specify the type of remote console.	
Continue Redirection after POST	Disabled [Enabled]	Specify whether to continue console redirection feature after completion of POST.	
Remote Console Reset	[Disabled] Enabled	Specify whether to enable or disable resetting by Escape command (Esc R) sent from the remote console. If the server is connected with the management PC that uses NEC ESMPRO Manager, this option is always enabled even if "Disabled" is specified here.	

[ ]: Factory-set

BMC LAN Configuration Submenu

Option	Parameter	Description	Your Setting
IP Address	[192.168.001.129]	Specify an IP address for management LAN.	
Subnet Mask	[255.255.255.000]	Specify a subnet mask for management LAN.	
Default Gateway	[192.168.001.254]	Specify a default gateway for management LAN.	
DHCP	Disabled [Enabled]	Set to [Enabled] to obtain an IP address from DHCP server automatically. If you intend to specify an IP address manually, set to [Disabled].	
Web Interface	–	–	
HTTP	Disabled [Enabled]	Set to [Enabled] to use HTTP communication for Web interface.	
HTTP Port Number	[80]	Specify the TCP port number which the management LAN uses for HTTP communication.	
HTTPS	Disabled [Enabled]	Set to [Enabled] to use HTTPS communication for Web interface.	
HTTPS Port Number	[443]	Specify the TCP port number which the management LAN uses for HTTPS communication.	
Command Line Interface	–	–	
Telnet	Disabled [Enabled]	Set to [Enabled] to use Telnet communication as a command line interface.	
Telnet Port Number	[23]	Specify the TCP port number to be used for Telnet communication.	
SSH	[Disabled] Enabled	Set to [Enabled] to use SSH communication as a command line interface.	
SSH Port Number	[22]	Specify the TCP port number to be used for SSH communication.	
Clear BMC Configuration	[Enter]	Press **Enter** and select "Yes" to initialize the BMC configuration.	

[ ]: Factory-set

IMPORTANT: Notes on performing Clear BMC Configuration

- Executing "Load Setup Defaults" in BIOS SETUP utility does not restore the default value for settings related to management LAN of BMC. To restore the default value, you need to execute Clear BMC Configuration.
- It takes about several tens seconds until initialization completes after execution of Clear BMC Configuration.
- Executing Clear BMC Configuration also clears settings made in NEC ESMPRO Manager. Before execution, be sure make backup copy of setting information of NEC ESMPRO Manager.

NOTE: Executing [Save Custom Defaults/Load Custom Defaults] of BIOS SETUP does not save the settings you have made in BMC LAN Configuration menu.

Event Log Configuration Submenu

Option	Parameter	Description	Your Setting
System Event Log	–	System Event Log submenu is displayed.	
Auto Clear Event Logs	[Disabled] Enabled	If set to "Enabled", logs are automatically cleared when the error log area is fulfilled.	
Clear All Event Logs	–	Press **Enter** and select "Yes" to clear the system event log.	

[ ]: Factory-set

Boot

The CPU blade searches for devices in the order set in this menu on booting. Finding the boot software, the CPU blade starts the software.

The priority of the boot devices can be changed by using the ↑, ↓, +, and - keys. Move the cursor to the desired device with the ↑ or ↓ key and change the priority with the + or - key.

The boot device priority is factory-set in the following order.

- USB CDROM (optical drive)
- USB FDC (removable device)
- IBA GE Slot 0100 v1324 (LAN1)
- Hard Drive
- USB Hard Drive
- IBA GE Slot 0101 v1324 (LAN2)

Exit

The options on the menu are described below.

> **IMPORTANT:** The values of SETUP at the shipment may be different from their default values depending on the model of the CPU blade. It is necessary to set the values meeting the environment in which the CPU blade is used referring to the models.

Exit Saving Changes

Exit after writing all modified BIOS SETUP item values to CMOS.

Exit Discarding Changes

Exit leaving CMOS unmodified. User is prompted if any of the setup fields ware modified.

Load Setup Defaults

Load default values for all BIOS SETUP items.

Load Custom Defaults

Load custom defaults for BIOS SETUP options.

Save Custom Defaults

Saves the current values as custom defaults. The “Load Custom Defaults” menu appears on the screen after saving the custom default values.

Discard Changes

Read the previous values of the all BIOS SETUP items from CMOS.

Save Changes

Write all BIOS SETUP item values to CMOS.

RAID CONFIGURATION

This section describes how to use the internal hard disk drives as RAID System by N8403-027 SATA interface card or N8403-026 RAID Controller.

About the optional RAID Controller, refer to the documents provided with optional RAID Controller.

RAID

Overview of RAID System

What is RAID (Redundant Array of Inexpensive Disks)?

RAID is an abbreviation for "Redundant Array of Inexpensive Disks". The RAID technology allows more than one hard disk drive (HDD) to be handled collectively.

In actual, RAID can configure more than one HDDs as a single array (disk group) to operate the HDDs effectively. This can bring higher performance than a single HDD of a large capacity.

N8403-027 SATA interface card or N8403-026 RAID Controller has a feature to divide a single disk group into several virtual drives. Operating system recognizes these virtual disks as if it were a single hard disk drive. Operating system accesses to more than one hard disk drive configuring a disk group in parallel.

Some RAID levels can recover data from remaining data and parity by using rebuild feature if an error occurs in a single HDD. This can provide high reliability for the system.

RAID Levels

The record mode enabling the RAID feature includes several levels. N8403-027 SATA interface card and N8403-026 RAID Controller support RAID levels 0 and 1. The number of hard disk drives required to create a disk group varies depending on the RAID level as shown in the table below.

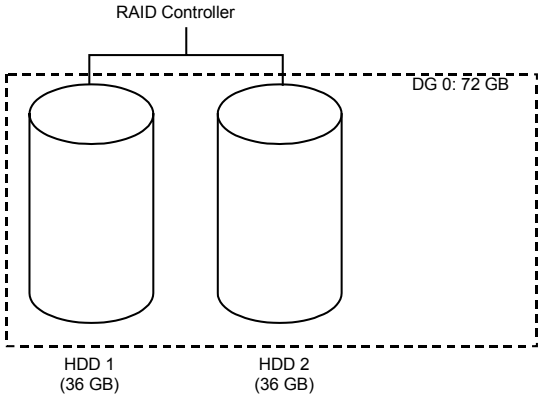
RAID level	Number of required HDDs	
	Min.	Max.
RAID 0	1	2
RAID 1	2	2

NOTE: For details of the RAID levels, see "RAID Levels" described later in this chapter.

Disk Group

A disk group is configured with more than one HDDs.
The allowable number of disk groups is equal to the number of HDDs.

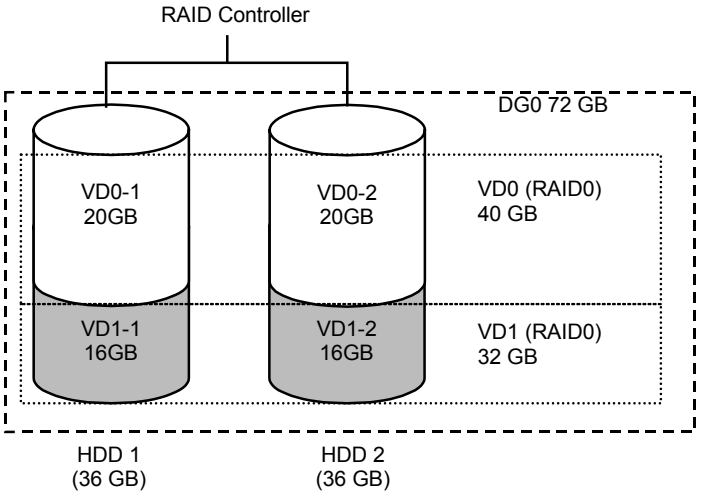
The figure below shows a sample configuration. The two HDDs are connected to N8403-027 SATA interface card or N8403-026 RAID Controller, creating one disk group (DG).



Virtual Disk

Virtual drive is defined in disk group. It is recognized as a physical drive by OS. The allowable number of virtual disks is up to 16 per disk group, or up to 64 per controller.

The figure below shows a sample configuration in which the N8403-027 SATA interface card or N8403-026 RAID Controller is connected with two HDDs, creating one Disk Group. Two virtual drives (VD) of RAID0 are defined in the Disk Group.



Hot-Swap

The hot-swap enables a HDD to be removed (or replaced) under system operation.

RAID Levels

Characteristics of RAID Levels

The table below lists the characteristics of the RAID levels.

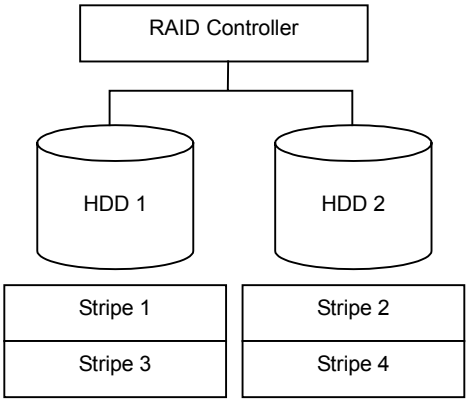
Level	Function	Redundancy	Characteristics
RAID0	Striping	No	• Data read/write at the highest rate • Largest capacity • Capacity: (capacity of single HDD) × (number of HDDs)
RAID1	Mirroring	Yes	• Two HDDs required • Capacity: capacity of single HDD

RAID0

In RAID0, data to be recorded is distributed to HDDs. The mode is called "striping".

In the figure below, data is recorded in stripe 1 (disk 1), stripe 2 (disk 2), and stripe 3 (disk 1)… in the order. Because RAID0 allows all HDDs to be accessed collectively, it can provide the best disk access performance.

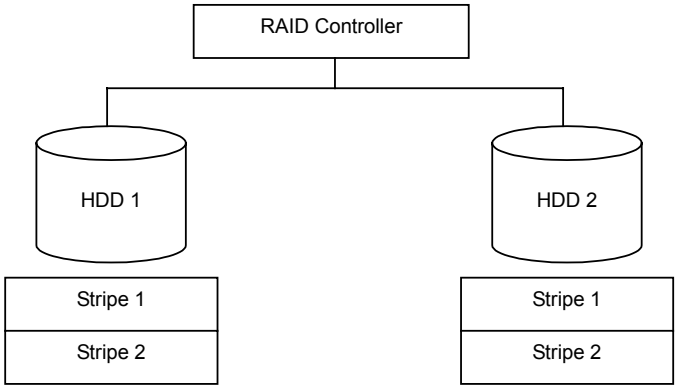
IMPORTANT: RAID0 cannot have data redundancy. If a HDD is defected, the data saved in the HDD cannot be recovered.



RAID1

In the RAID1 level, data saved in a HDD is written to another HDD without change. The mode is called "mirroring".

When data is written onto a single HDD, the same data is written onto another HDD. If either of the HDDs is defected, the other HDD containing the same data can substitute for the defected HDD. Thus the system can continue to operate without interruption.



Configuration by N8403-027 SATA Interface Card

This section describes how to use the internal hard disk drives as RAID System by N8403-027 SATA Interface card.

Installing the Hard Disk Drives

Install two hard disk drives to your CPU blade. See Chapter 9 for detail.

> **IMPORTANT:** Use two hard disk drives of the same revolution. In addition, use two hard disk drives of the same capacity if you are going to configure RAID1.

Enabling RAID Feature

You can use the two hard disk drives as a single disk drive or RAID drives. To configure a hard disk drive as RAID drive, run SETUP utility and select [Advanced] - [PCI Configuration] - [Onboard SCSI] - [Option Rom] - [Enabled]. See Chapter 4 for details.

> **NOTE:** The factory-set value is to use the hard disk drive as a RAID drive.

LSI Software Configuration Utility

The configuration tool used for N8403-027 SATA interface card / N8403-026 RAID controller is "LSI Software Configuration Utility".

> **NOTE:** The LSI Software Configuration Utility cannot be used on remote console feature of NEC ESMPRO Manager.

Running the Utility

1. When the following screen appears after you have powered on the CPU blade, press **Esc**.

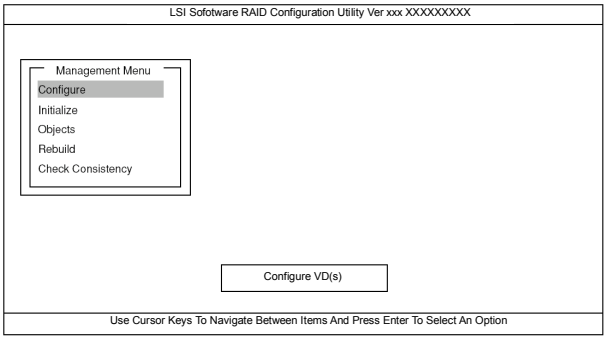
   The POST screen appears.

2. Check the description as shown below on the POST screen, then press **Ctrl** + **M**.

   Press <Ctrl><M> or Enter to Run LSI Software Configuration Utility

   LSI Software Configuration Utility starts, and its TOP Menu appears.

LSI Software Configuration Utility TOP Menu (Management Menu)



See "Menu Tree" and "Operating Procedures for Setup Utility" described later for setup and operation of disk array.

Exiting from the Utility

Press **Esc** in the TOP menu of LSI Software Configuration Utility.

When a confirmation message appears, select [Yes].

```
Please Press Ctrl-Alt-Del to REBOOT the system.
```

When the above message appears, press **Ctrl** + **Alt** + **Delete**.

The CPU blade is rebooted.

Menu Tree

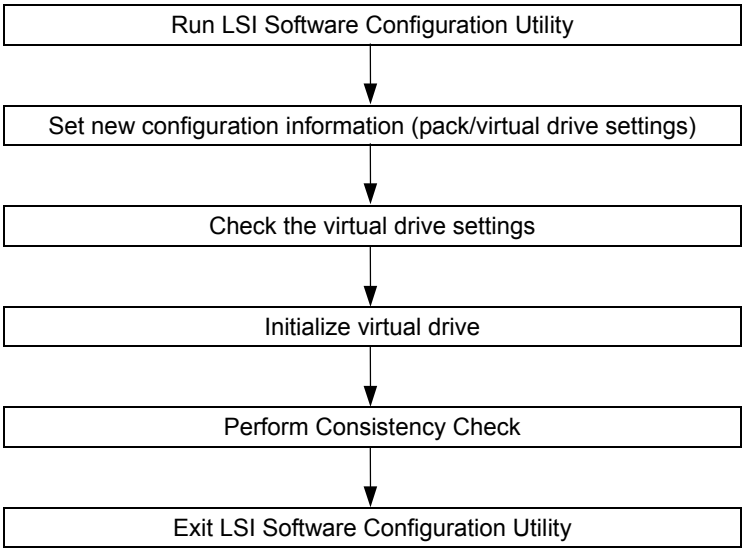
Setting list

+: Selection/execution parameter ✶: Setting parameter. •: Information display
>: Can be set (modified) after creation of virtual drive

Menu	Description
+Configure	Performs Configuration settings
+Easy Configuration	Set configuration (Using fixed value)
+New Configuration	Set new configuration
+View/Add Configuration	Additional setting / viewing configuration
+Clear Configuration	Clear configuration
+Select Boot Drive	Choose Bootable Virtual Drive
+Initialize	Initialize Virtual Drive
+Objects	Various settings
+Adapter	Set RAID controller
+Sel. Adapter	Clear configuration
✶Rebuild Rate	30
✶Chk Const Rate	30
✶FGI Rate	30
✶BGI Rate	30
✶Disk WC	Off
✶Read Ahead	On
✶Bios State	Enable
✶Cont on Error	Yes
✶Fast Init	Enable
✶Auto Rebuild	On
✶Auto Resume	Enable
✶Disk Coercion	1GB
✶Factory Default	Set to default value
+Virtual Drive	Virtual drive operation
+Virtual Drives	Select virtual drive (when multiple virtual drives exist)
+Initialize	Initialize virtual drive
+Check Consistency	Check virtual drive redundancy
+View/Update Parameters	Display virtual drive information
• RAID	Display RAID level
• SIZE	Display virtual drive capacity
• Stripe SIZE	Display stripe size
• #Stripes	Display the number of hard disk drives in virtual drive
• State	Display virtual drive status
• Spans	Display setting of spanning
• Write Cache	Display setting of write cache
• Read Ahead	Display setting of read ahead
+Physical Drive	Physical drive operation
+Physical Drive Selection Menu	Select physical drive
+Make HotSpare	Set as hot-spare disk for auto rebuilding
+Force Online	Make a disk online
+Change Drv State	Make a disk offline or make a hot-spare ready
+Device Identification	Display hard disk drive information
• Device Type	Hard disk drive type
• Capacity	Hard disk drive capacity
• Product ID	Hard disk drive model
• Revision No.	Hard disk drive revision
+Rebuild	Perform rebuilding
+Check Consistency	Perform virtual drive redundancy check

Operating Procedures for Setup Utility

Creating/Adding Configuration

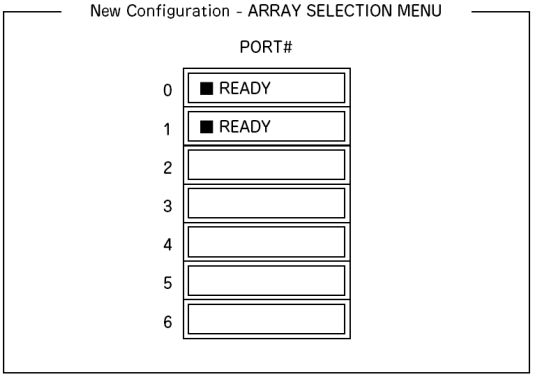

Run LSI Software Configuration Utility
Set new configuration information (pack/virtual drive settings)
Check the virtual drive settings
Initialize virtual drive
Perform Consistency Check
Exit LSI Software Configuration Utility

1. Run LSI Software Configuration Utility.
2. Select [Configure] → [New Configuration] from the TOP menu (Management Menu).

IMPORTANT: Creating a configuration using [New Configuration] menu clears the existing configuration information.

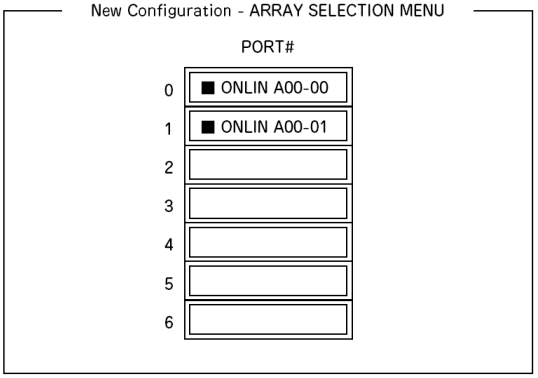
3. When a confirmation message (Proceed?) is displayed, select [Yes.]

The SCAN DEVICE starts (scanning information is displayed at the bottom of the screen). Upon completion of SCAN DEVICE, the [New Configuration - ARRAY SELECTION MENU] screen appears.



4. Move the cursor onto the hard disk drive to be packed and then press **Space** to select the hard disk drive.

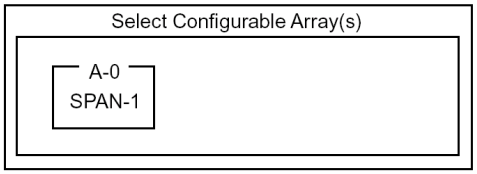
The display for the selected hard disk drive changes from READY to ONLINE.



5. Press **F10** to set [Select Configurable Array(s)].

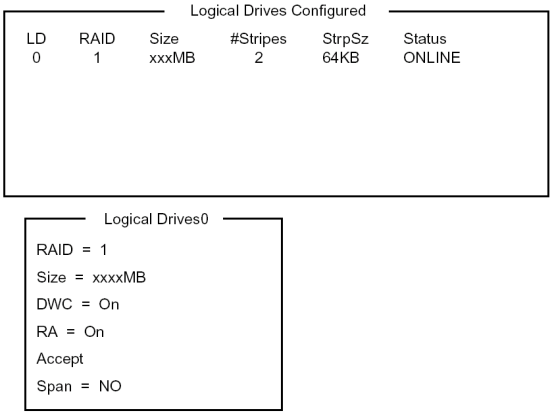
6. Press **Space**.

SPAN-1 is set.



7. Press **F10** to create virtual drive.

The [Virtual Drives Configure] screen appears. (The figure below shows an example of RAID1 configured with two hard disk drives.)



8. Select "RAID", "Size", "DWC", "RA", or "Span" by using cursor keys. Then press **Enter** to fix the selection and set each value.

(1) "RAID": Sets RAID level.

Parameter	Description
0	RAID0
1	RAID1

(2) "Size": Sets virtual drive size.

Up to 8 virtual drives can be created per RAID controller.

(3) "DWC": Sets parameter for Disk Write Cache.

Parameter	Description
Off	Write thru
On (Recommended) *	Write back

* DWC is factory-set to "On" in consideration of performance. The data in cache memory may be lost if an unexpected power failure occurs. If set to "Off", the performance may be decreased to approximately 50% or less.

(4) "RA": Sets parameter for Read Ahead.

Parameter	Description
Off	Does not perform read ahead.
On (Recommended)	Performs read ahead.

(5) "Span: Sets Span.

Parameter	Description
SPAN=NO (Recommended)	Does not perform SPAN.
SPAN=YES	Performs SPAN.

* SPAN is not available since the CPU blade contains only two hard disk drives.

9. When all settings are completed, select "Accept" and then press **Enter** to create virtual drive.

   The created virtual drive is displayed in the [Virtual Drive Configured] screen.

10. After creating virtual drive, press **Esc** to exit from the menu.

    Go back to the [Save Configuration?] screen and then select "Yes" to save the configuration.

11. When the confirmation message shows that the configuration has been saved, press **Esc** to return to the TOP menu screen.

12. On the TOP menu screen, select [Objects] → [Virtual Drive] → [View/Update Parameters] to check virtual drive information.

13. Select [Initialize] in the TOP menu screen.

14. When the [Virtual Drives] screen appears, move the cursor to the virtual drive to be initialized, and press **Space**.

    The virtual drive is selected.

15. After selecting virtual drive, press **F10** to start initialization.

    A confirmation screen for execution appears. Select "Yes" to start initialization.

    When the progress bar in the [Initialize Virtual Drive Progress] screen indicates 100%, initialization is completed.

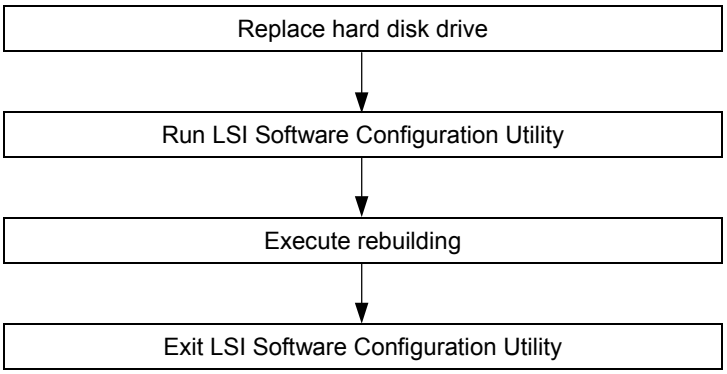
16. Execute Check Consistency on the virtual drive that has been initialized.

    See [Check Consistency] for details.

17. Press **Esc** to return to the TOP menu and exit from LSI Software Configuration Utility.

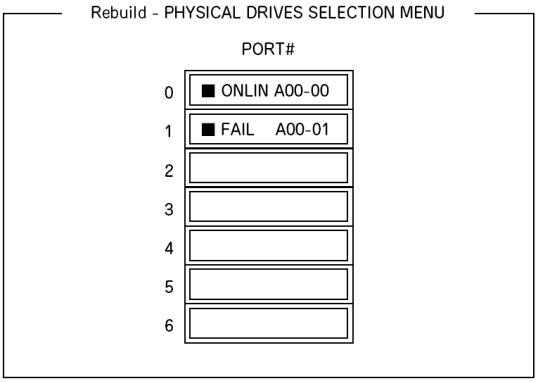
IMPORTANT: Be sure to execute Check Consistency after creating configuration. Inconsistency may be detected or corrected at the first Check Consistency performed after the configuration has been created, however, it is not a problem.

Manual Rebuild


Replace hard disk drive
Run LSI Software Configuration Utility
Execute rebuilding
Exit LSI Software Configuration Utility

1. Replace a hard disk drive and turn on the CPU blade.
2. Run LSI Software Configuration Utility.
3. Select [Rebuild] from the TOP menu.

   The [Rebuild – PHYSICAL DRIVES SELECTION MENU] screen appears.



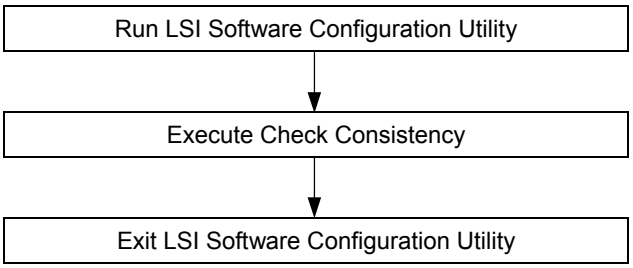
4. Move the cursor onto the hard disk drive displaying "FAIL", and then press **Space** to select it.

   Multiple hard disk drives can be selected (simultaneous rebuilding.)
5. The "FAIL" indication for the hard disk drive selected starts blinking.
6. When hard disk drive has been selected, press **F10** to start rebuilding.
7. When confirmation screen for execution appears. Select "Yes".

   The rebuild process starts.

   When the progress bar in the [Rebuild Physical Drives in Progress] screen indicates 100%, rebuilding is completed.
8. Press **Esc** to return to the TOP menu and exit LSI Software Configuration Utility.

Check Consistency



1. Run LSI Software Configuration Utility.
2. Select [Check Consistency] from the TOP menu.

   The [Virtual Drives] screen appears.
3. Move the cursor onto the virtual drive to be checked, and press **Space** to select it.
4. When virtual drive has been selected, press **F10** to start consistency check.
5. A confirmation screen for execution appears. Select "Yes".

   The consistency check starts.

   When the progress bar in the [Check Consistency Progress] screen indicates 100%, the consistency check is completed.
6. Press **Esc** to return to the TOP menu and exit utility.

IMPORTANT: Be sure to execute Check Consistency after creating configuration.

Others

1. Clear Configuration

   Clears configuration information. Select [Configure] → [Clear Configuration] from the TOP menu. Executing [Clear Configuration] clears all configuration information on the RAID controller and hard disk drives. The configuration information on all channels of the RAID controller is also cleared.

   NOTES:

   - LSI Software RAID Configuration Utility cannot delete each virtual drive. Use Universal RAID Utility instead.
   - If the configuration information stored in RAID controller differs from that in hard disk drive, configuration by using the configuration information in RAID controller will fail. Perform "Clear Configuration", then create a configuration again.

2. Force Online

   Puts a hard disk drive being in the FAIL status online.

   Select [Objects] → [Physical Drive] → (select hard disk drive) → [Force Online] from the TOP menu.

3. Rebuild Rate

   Sets the Rebuild Rate.

   Select [Objects] → [Adapter] → [Sel. Adapter] → [Rebuild Rate] from the TOP menu.

   Available value is between 0% and 100%. Default value (recommended) is 30%.

4. Hard disk drive information

   Checks hard disk drive information.

   Select [Objects] → [Physical Drive] → (select hard disk drive) → [View Drive Information] from the TOP menu.

LSI Software Configuration Utility and Universal RAID Utility

You can use Universal RAID Utility for configuration and management, monitoring of N8403-027 SATA interface card / N8403-026 RAID cotnroller after start up operating system.

The point to keep in mind when you use Universal RAID Utility together with LSI Software Configuration Utility is as follows.

Terms

LSI Software Configuration Utility and Universal RAID Utility are different in term. When you use Universal RAID Utility together with LSI Software Configuration Utility, please convert terms by the following list.

Term of LSI Software Configuration Utility	Term of Universal RAID Utility	
	RAID Viewer	raidcmd
Adapter	RAID Controller	RAID Controller
Virtual Drive	Logical Drive	Logical Drive
Array	Disk Array	Disk Array
Physical Drive	Hard disk drive	Hard disk drive

NOTE: raidcmd is a command that Universal RAID Utility provides. For more information, refer to "Universal RAID Utility Ver2.0 User's Guide".

Number and ID

The number to manage each component of RAID Controller used in the LSI Software Configuration Utility is different from that in Universal RAID Utility, as shown in the table below. For more information, refer to "Universal RAID Utility Ver2.0 User's Guide".

Item	Management Number	
	LSI Software Configuration Utility	Universal RAID Utility
Adapter (RAID Controller)	A number beginning with 0	A number beginning with 1
Virtual Drive (Logical Drive)	A number beginning with 0	A number beginning with 1
Array (Disk Array)	A number beginning with 0	A number beginning with 1
Physical Drive (Hard disk drive)	A number beginning with 0	A number beginning with 1

Setting of Priority (Rate) of Background Tasks

LSI Software Configuration Utility displays and sets priority of background tasks (Rebuild, Patrol Read, and Consistency Check) by percentage. Universal RAID Utility uses three levels as High/Middle/Low for them. See the table below.

The priority indicates the ratio which the background task occupies to the process running by the RAID Controller.

The setting value of LSI Software Configuration Utility and the display level of Universal RAID Utility

Item	Setting value of LSI Software Configuration Utility (%)	Display level of Universal RAID Utility
Rebuild Rate	15 to 100	High
	8 to 14	Middle
	0 to 7	Low
Patrol Read Rate	15 to 100	High
	8 to 14	Middle
	0 to 7	Low
Chk Const Rate	15 to 100	High
	8 to 14	Middle
	0 to 7	Low

The setting level of Universal RAID Utility and the display level of LSI Software Configuration Utility

Item	Setting level of Universal RAID Utility	Display level of LSI Software Configuration Utility (%)
Rebuild Priority	High	20
	Middle	10
	Low	5
Patrol Read Priority	High	20
	Middle	10
	Low	5
Consistency Check Priority	High	20
	Middle	10
	Low	5

NOTES:

- LSI Software Configuration Utility allows you to set BGI Rate (Background Initialize Priority). But Universal RAID Utility does not.
- The server does not support full initialization feature, you cannot set Initialization Priority though Universal RAID Utility allows it.

Configuration by N8403-026 RAID Controller

This section describes how to use the internal hard disk drives as RAID System by N8403-026 RAID Controller.

Rebuild

If a HDD is defected, the rebuild feature can recover the data in the defected HDD. The rebuild can be applied to redundant virtual drives in the RAID1 level.

Manual Rebuild

The manual rebuild can be performed by using Universal RAID Utility, the management utility of the RAID Controller. Select a HDD and start the rebuild manually.

For the detailed operation, refer to the "Universal RAID Utility Ver2.0 User's Guide" in NEC EXPRESSBUILDER DVD that comes with the server.

Auto Rebuild

The RAID Controller can automatically start the rebuild without use of any utility such as Universal RAID Utility.

The auto rebuild includes the following type:

- Hot-swap rebuild

  Automatic rebuild by hot-swapping defected HDD.

IMPORTANT: Note the following for the rebuild:

- The HDD used for rebuild should have the same capacity, rotation speed, and standard as the defected HDD.
- During rebuild, the processing rate is decreased due to much load.
- During rebuild, do not shutdown or reboot the server. If the server is shutdown by an unforeseen accident such as power interruption, turn on the power again as soon as possible. The rebuild is automatically restarted.
- The interval from the removal of the defected HDD to the installation of a substitute HDD should be 60 sec or longer.
- If the hot-swap rebuild does not operate, perform the manual rebuild.

Patrol Read

The patrol read gives the read & verify test in the entire area of HDDs. It can be performed for all HDDs assigned to virtual drives.

The Patrol Read allows subsequent detects of HDDs to be detected and repaired.

For HDDs configuring redundant virtual drives, error sectors detected during Patrol Read can be repaired.

IMPORTANT: Note the following for the patrol read:

- For the RAID Controller, Patrol Read feature is factory-set to "Enabled".
- To change settings of Patrol Read, use Universal RAID Utility.
- If the system is restarted while running Patrol Read, Patrol Read resumes from that point.

Consistency Check

The Consistency Check is used to check consistency among virtual drives. It is available for redundant virtual drives except for RAID0. It is also available for host spare.

Consistency Check can be performed through WebBIOS or Universal RAID Utility.

Consistency Check performs not only consistency check but also repair of error sectors. Accordingly, it can be used as preventive maintenance.

IMPORTANT: Note the following for Consistency Check:

- During Consistency Check, the processing rate is decreased due to much load.
- If the system is restarted, the Consistency Check is aborted. However, the Consistency Check resumes after restart.
- To schedule execution of Consistency Check, use WebBIOS, not the Universal RAID Utility

Reconstruction

The reconstruction feature is used to change configuration and/or RAID level of existing virtual drive. The Reconstruction contains the following three features, however, the RAID Controller supports "Migration with addition" only.

> **IMPORTANT:** You can use WebBIOS for Reconstruction. Universal RAID Utility does not support Reconstruction.

Removed physical drive

Unsupported.

Migration only

Unsupported.

Migration with addition

Use this feature to add HDDs to existing virtual drive. The execution patterns are as shown below (α: Number of HDDs to be added).

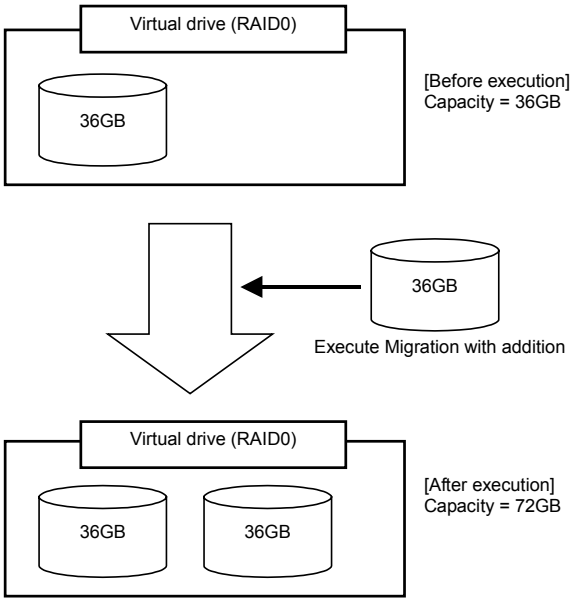
Before execution		After execution		Description
RAID level	Number of HDDs	RAID level	Number of HDDs	
RAID0	x	RAID0	x+α	Capacity increased: equivalent to α HDDs
RAID0	1	RAID1	2	Capacity remains unchanged.
RAID1	2	RAID0	2+α	Capacity increased: equivalent to α+1 HDDs

IMPORTANT: Note the following for the Reconstruction:

- Be sure to make backup copy of data and perform Consistency Check before starting Reconstruction.
- The Reconstruction is disabled in the configuration where several virtual drives are defined in one disk group
- During Reconstruction, the processing rate is decreased due to much load.
- The Reconstruction may be performed for the degraded or partially degraded virtual drive. However, it is recommended to execute Rebuild to recover the virtual drive, then execute Reconstruction.
- During Reconstruction, do not shutdown or reboot the server. If the server is shutdown by an unforeseen accident such as power interruption, turn on the power again as soon as possible. The Reconstruction is automatically restarted.
- In some configuration, Background Initialize may start automatically upon completion of Reconstruction.

Ex: Migration with addition for RAID0 virtual drive

The figure below shows an example of adding a single 36GB HDD to a RAID0 virtual drive configured with a single 36GB HDD to make data redundancy available.



Before Using WebBIOS

Read the following sections describing supported functions and precautions before using "WebBIOS".

Supported Functions

- Indication of model name and capacity of hard disk drive
- Indication of allocation status of hard disk drive
- Creation of virtual drive
  - Setting of RAID level
  - Setting of Stripe Block size
  - Setting of Read Policy/Write Policy/IO Policy
- Indication of configuration information and status of virtual drive
- Removal of virtual drive
- Clearing of configuration
- Execution of initialization
- Execution of Consistency Check
- Execution of manual rebuild
- Execution of reconstruction

Notes on Creating Virtual Drive

1. The hard disk drives configuring the drive group should have the same capacity and rotation speed.
2. Be sure to execute Consistency Check after creating VD.
3. When installing an OS in VD under N8403-026 RAID controller, create a VD dedicated to OS installation.
4. WebBIOS cannot be handled via remote console functions of NEC ESMPRO Manager.
5. The physical drive numbers shown in WebBIOS and those shown in Universal RAID Utility are identified as follows.

   – WebBIOS

   Slot number shown in Physical View *

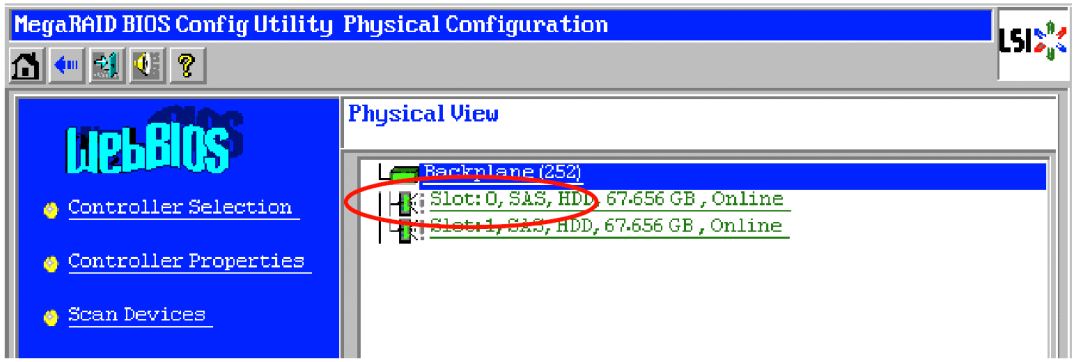
   *1: The slot number, type of hard disk drive, its capacity, and its current status are shown in Physical View.

   The slot number is indicated by the number 0 or 1. It represents the slot number in the hard disk drive.

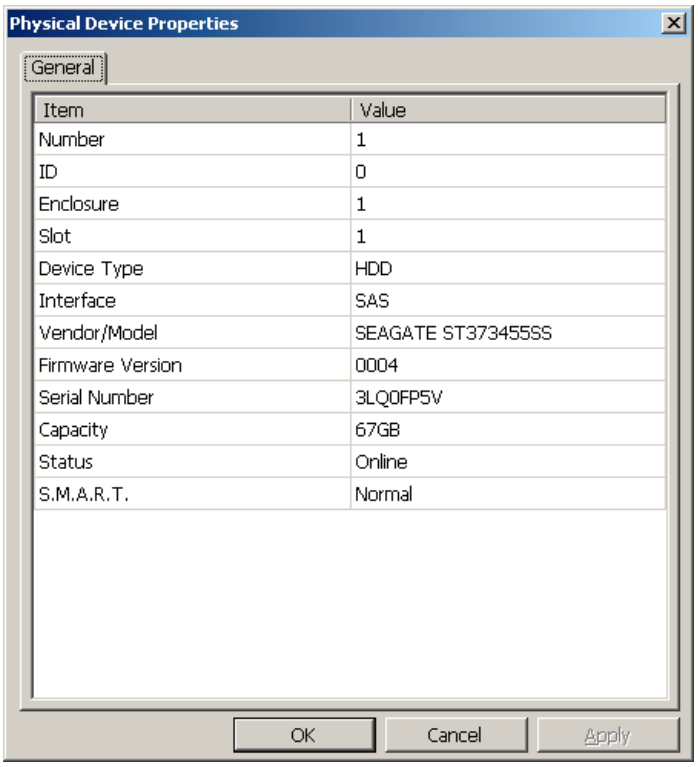
   – Universal RAID Utility

   ID shown in Hard disk drive Properties

   The slot number shown on WebBIOS corresponds to the hard disk drive ID shown on Universal RAID Utility. For more information, refer to the Universal RAID Utility Ver2.0 User's Guide.



Physical View of WebBIOS



Property of Hard disk drive of Universal RAID Utility

Using WebBIOS

Starting WebBIOS

1. When the screen as shown below appears, press **Ctrl** + **H** to start WebBIOS.

```
LSI MegaRAID SAS - MFI BIOS
Version XXXX (Build MMM DD, YYYY)
Copyright (c) 20XX LSI Corporation

HA - X (Bus X   Dev X)   MegaRAID SAS 8708EM2
FW package: X.X.X - XXXX

0 Virtual Drive(s) found on the host adapter.

0 Virtual Drive(s) handled by BIOS.
Press <Ctrl> <H> for WebBIOS.....
```

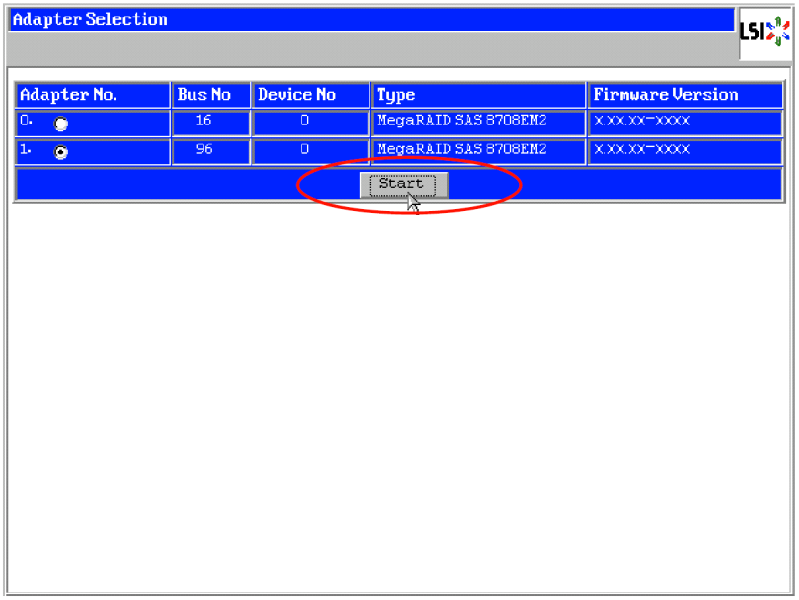
POST screen image (with no virtual drive assigned)

IMPORTANT:

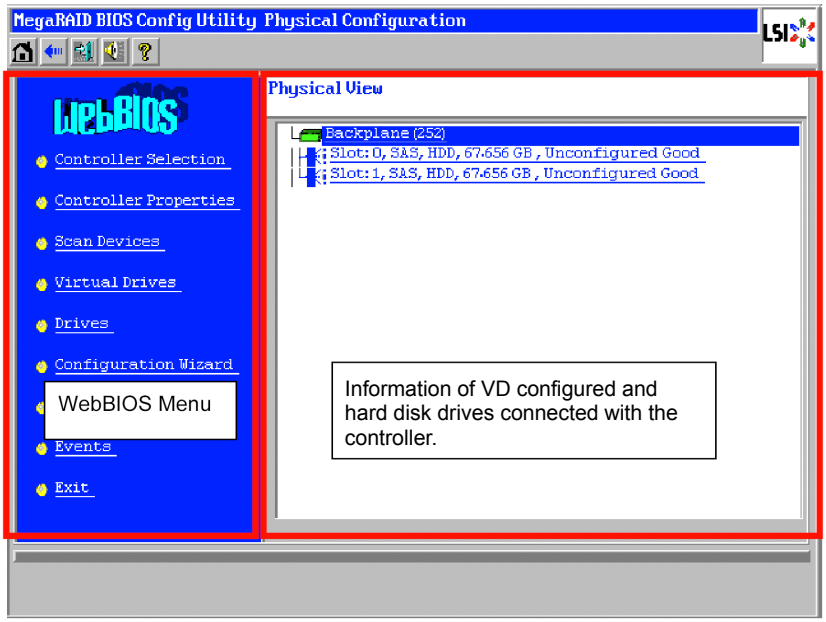
- Do not press unnecessary key such as **Pause** during POST.
- If you fail to press **Ctrl** + **H** or the system proceeds without displaying the WebBIOS main menu (shown on the next page), reboot the system, and press **Ctrl** + **H** on POST screen.

Main Menu

Shown below is [Adapter Selection] screen that appears first on WebBIOS. On [Adapter No.] box, select an adapter you want to operate with WebBIOS, then click [Start].



When the adapter is selected on [Adapter Selection], the WebBIOS Top Menu appears.



WebBIOS Menu

Controller Selection:	Goes back to Adapter Selection menu.
Controller Properties:	Displays properties of the controller.
Scan Devices:	Detects hard disk drives connected with the controller again.
Virtual Drives:	Opens operation window for VD that has already been configured.
Drives:	Opens operation window for hard disk drive connected with the controller.
Configuration Wizard:	Displays the wizard to configure VD.
Physical View / Logical View:	Switches indication between hard disk drives and VD configuration.
Events:	Displays event data.
Exit:	Goes to Exit menu of WebBIOS.

Status Indication of Virtual Drive (not shown on Physical View)

Optimal:	Indicates that the VD is in normal state. The indication is green.
Degraded:	Indicates that one of the hard disk drives in the relevant VD is degraded. The indication is blue.
Offline:	The relevant VD is in offline state. The indication is red.
Initialization:	The relevant VD is being initialized.
ConsistencyCheck:	Consistency Check is being performed to the relevant VD.
Rebuild:	The relevant VD is being rebuilt.
Reconstruction:	The relevant VD is being reconstructed.

Status Indication of Hard disk drive

Reconstruction:	The relevant VD is being reconstructed.
Unconfigured Good:	The hard disk drive connected with the controller is not in use. The indication is blue.
Online:	Indicates that the hard disk drive in configuration is in normal state. The indication is green.
Offline:	Indicates that the hard disk drive in configuration is in offline state. The indication is red.
Unconfigured Bad:	The relevant hard disk drive is faulty. (The hard disk drive in this status can be checked only on Physical View.) The indication is black.
Rebuild	The relevant hard disk drive is being rebuilt. The indication is yellow.
Hotspare	Indicates the hard disk drive that is assigned to hot-spare. The indication is pink.

IMPORTANT:

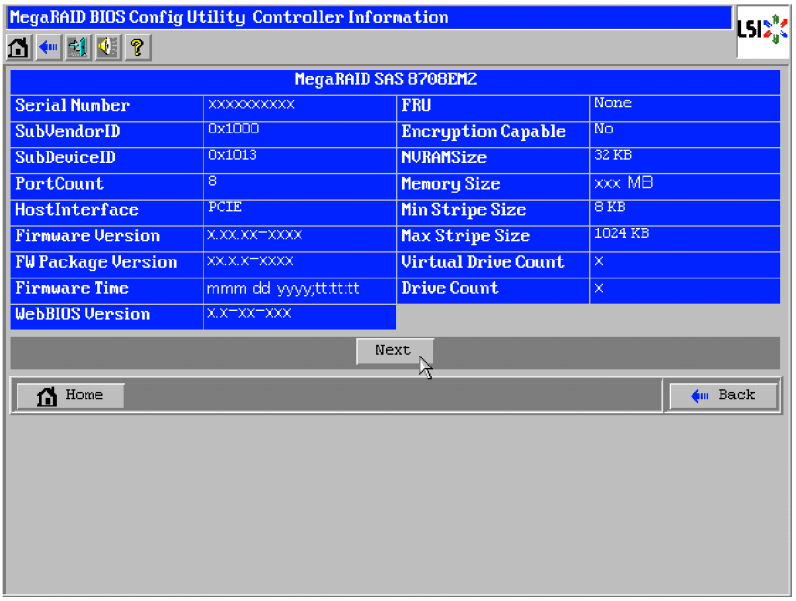
- The right frame of Physical View shows slot number, type, capacity, and status of hard disk drive.
- The slot number is represented by the number 0 or 1. It indicates the slot number of the hard disk drive bay.
- The controller does not support the Events feature.

NOTE: S.M.A.R.T status

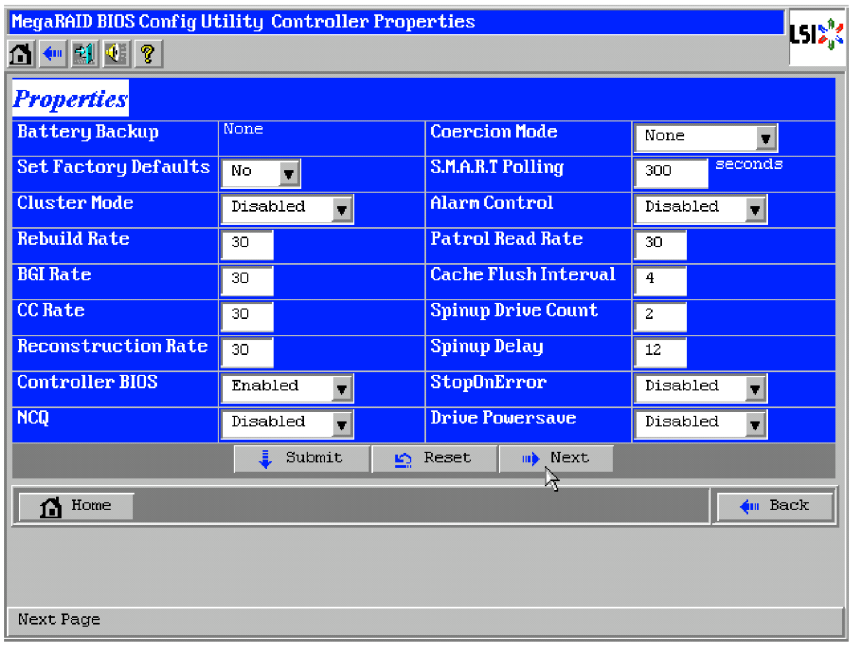
- The information of the hard disk drive that has one or more Pred Fail Count is displayed in yellow.
- Indicates that the device has failed in the past. You can use the device as usual, however, we recommend you to replace it with new one.

Controller Properties

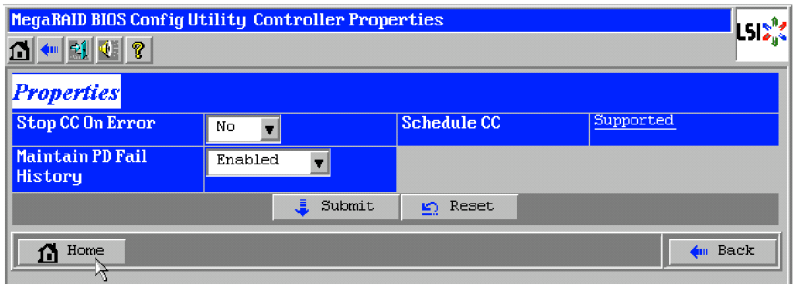
When you click [Controller Properties] on WebBIOS Top Menu, the configuration information is displayed.



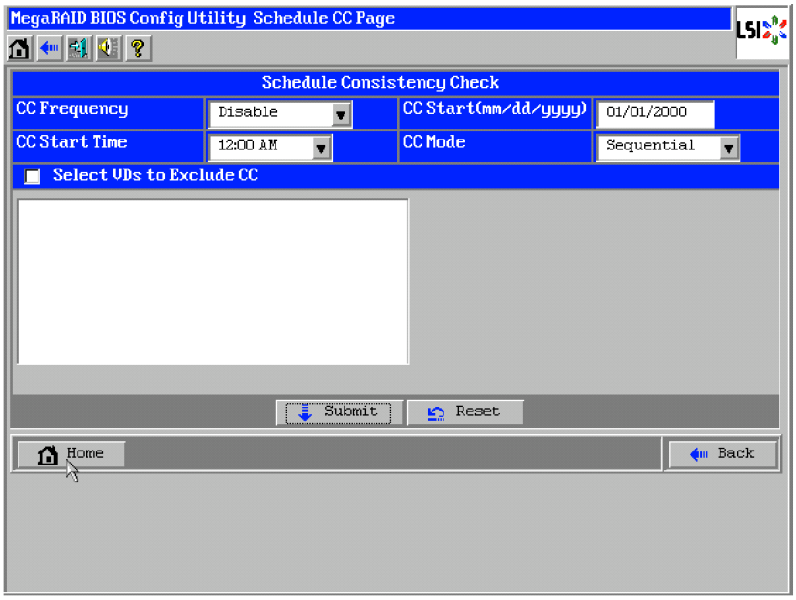
Click [Next] to see the detailed settings of this controller.



The detailed setting is continued on the next page. Click [Next] to view more information.



Clicking [Supported] in "Schedule CC" opens the screen for setting scheduled consistency check.



Default settings and their explanation

Item	Default	Description	Change
Battery Backup	Present None	Displays Properties of additional battery. • When battery is installed: Present • When battery is not installed: None	–
Set Factory Defaults	No	–	Prohibited *1
Cluster Mode	Disabled	–	Prohibited
Rebuild Rate	30	Recommended value: 30	Permitted
BGI Rate	30	Recommended value: 30	Permitted
CC Rate	30	Recommended value: 30	Permitted
Reconstruction Rate	30	Recommended value: 30	Permitted
Controller BIOS	Enabled	–	Prohibited
NCQ	Disabled	–	Prohibited
Coercion Mode	None	–	Prohibited
S.M.A.R.T Polling	300	–	Prohibited
Alarm Control	Disabled	Disabled: Does not issue an alarm. Enabled: Issues an alarm. Silence: Stops an alarm if beeped.	Permitted *2
Patrol Read Rate	30	Recommended value: 30	Permitted
Cache Flush Interval	4	–	Prohibited
Spinup Drive Count	2	–	Prohibited
Spinup Delay	12	–	Prohibited
StopOnError	Disabled	–	Prohibited
Drive Powersave	Disabled	–	Prohibited
Stop CC On Error	No Yes	Specify the operation at error detection in Consistency Check. No: Recover and resume. Yes: Abort	Permitted
Maintain PD Fail History	Enabled	–	Prohibited
Schedule CC	Supported	Set the scheduled consistency check.	Permitted

*1 Do not perform "Set Factory Defaults". If performed, the NEC's factory-set value will no longer be restored.

*2 If Alarm Control is set to "Enabled", the server issues an alarm sound when the VD is degraded due to failure of hard disk drive.

How to change setting value

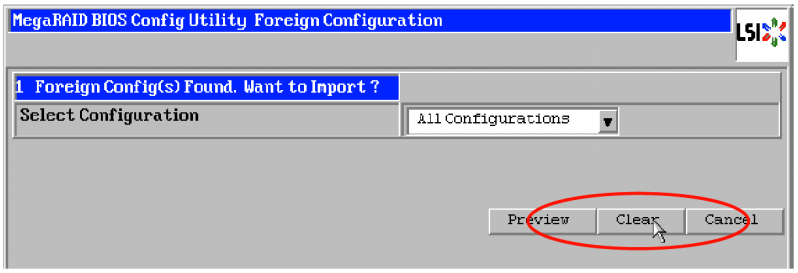
On [Controller Properties] screen, change a parameter to desired value, and then click [Submit] at the center of the screen to determine the new value.

Scan Devices

When you click [Scan Devices] on WebBIOS Top Menu, the connected hard disk drives are detected again. Use this feature when you have installed a new hard disk drive additionally while the WebBIOS is running.

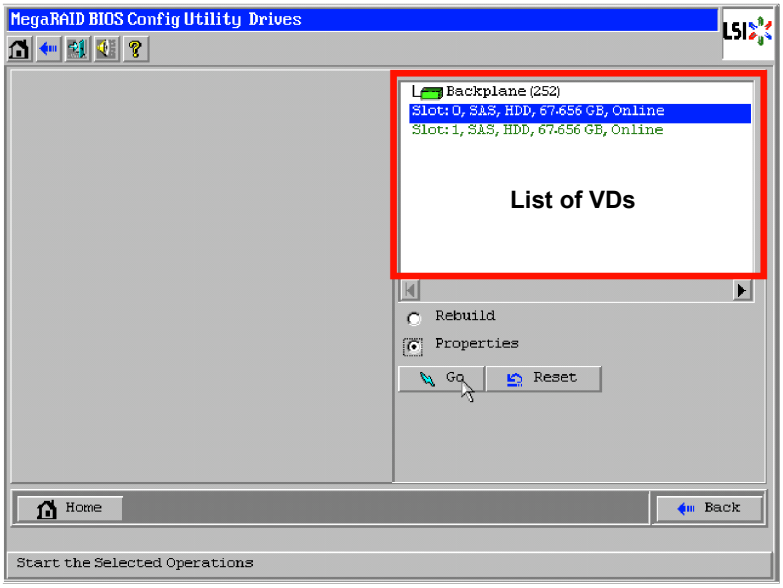
IMPORTANT:

- If the newly connected hard disk drive contains another configuration information, [Foreign Configuration] screen as shown below appears. To use the hard disk drive as new one, click [Clear] to clear the configuration information in hard disk drive.
- If you want to create a logical drive by using the Universal RAID Utility with the newly connected hard disk drive containing another configuration information, first clear another configuration information using this Scan Devices feature.
  (*) Universal RAID Utility does not have this feature.



Virtual Drives

When you click [Virtual Drives] on WebBIOS Top Menu, the screen for operating the VD that has already been configured. List of VDs box shows existing VDs.



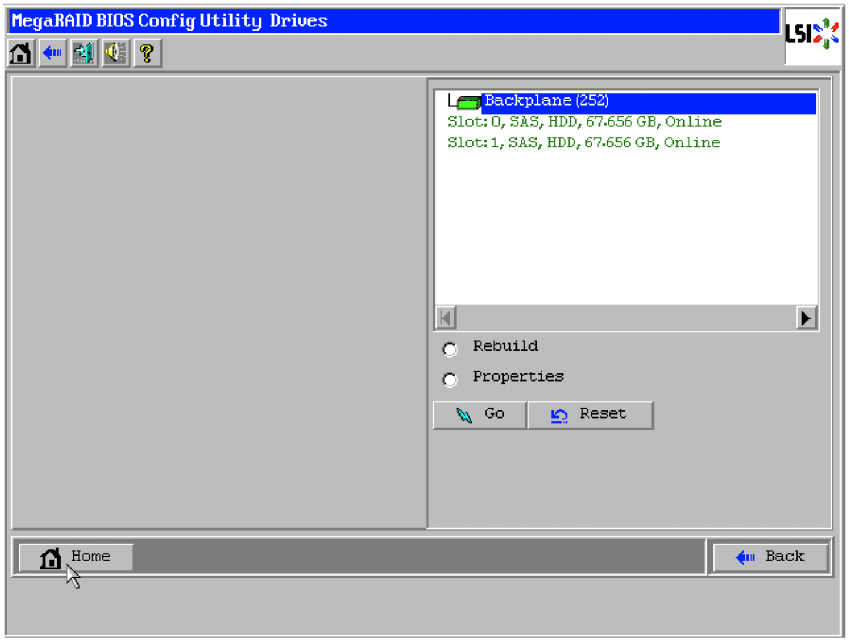
Fast Initialize:	Clears the top area of the VD being selected in List of VDs box.
Slow Initialize:	Clears whole area of the VD being selected in List of VDs box.
Check Consistency:	Checks consistency in the whole area of the VD being selected in List of VDs box. If inconsistency is found, correct it.
Properties:	Displays the properties of the VD being selected in List of VDs box.
Set Boot Drive (Current =XX): Default: NONE	Selects a VD to start operating system. If the system contains several VDs and you want to start the operating system from the VD other than VD0, you need to specify the boot drive manually as shown below. Use the default setting in any other cases. [Setting procedure] 1. Select a VD you want to start operating system from the List of VDs box. 2. Put a checkmark on "Set Boot Drive (Current =XX)". 3. Click [Go].

IMPORTANT:

- If no virtual drive exists, the List of VDs box will be blank. Use this menu only when a virtual drive exists.
- Even the "Set Boot Drive" is properly specified, the operating system may fail to start due to Boot Priority specified in BIOS SETUP of the server.
- Inconsistency may be detected at the first Check Consistency performed after the VD was configured.

Drives

When you click [Drives] on WebBIOS Top Menu, the screen for operating the connected physical drive appears.

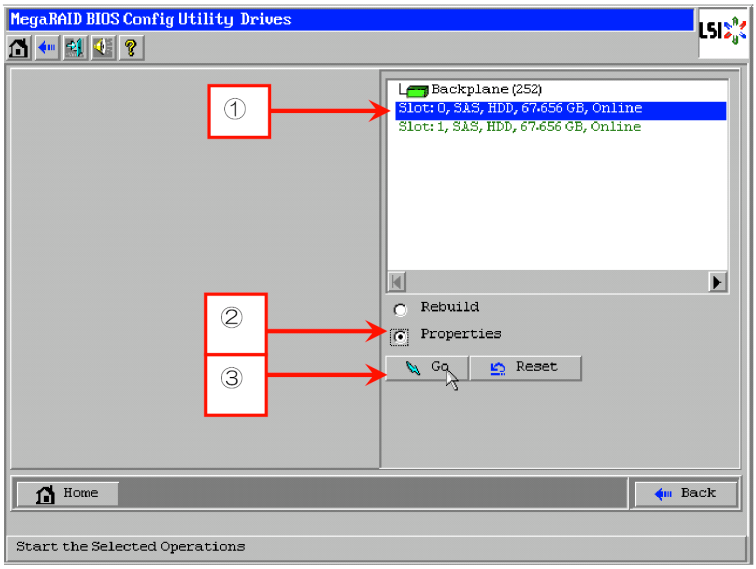


IMPORTANT: If no device is connected, the upper right column of the screen will be blank. Use this menu only when a hard disk drive is being connected.

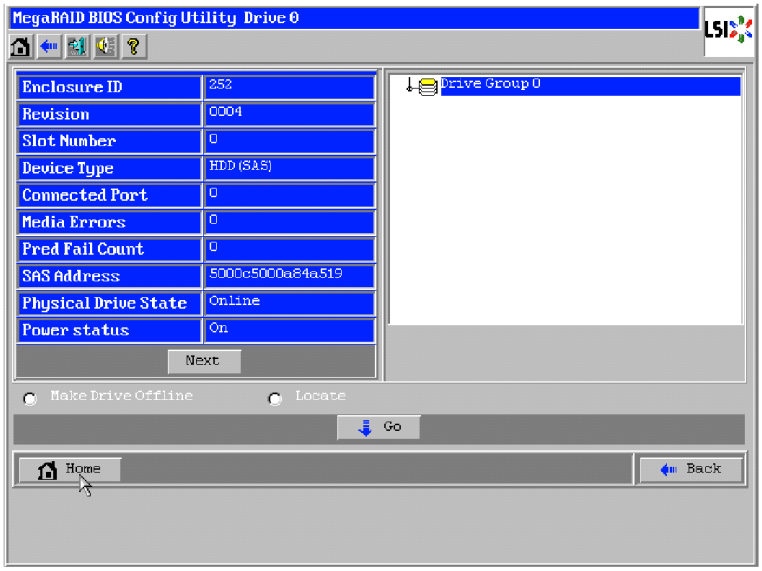
Physical Drive Properties

Take the following procedures to check Physical Drive Properties. Shown below is an example to check property of physical drive.

1. Click the Physical Drive you want to check.
2. Click the checkbox for [Properties].
3. Click [Go].



The Properties screen as shown below appears.



Physical Drive Properties

Locate:	Let Disk Status lamp light or blinks.
Make Global HSP:	The selected hard disk drive is assigned as hot-spare available for all DGs.
Make Dedicated HSP:	The selected hard disk drive is assigned as hot-spare available only for the specific DG.
Remove HOTSPARE:	The selected hard disk drive is unassigned from hot-spare and made Unconfigured Good state.
Make Unconf Bad:	Make the selected hard disk drive in faulty state. This is indicated on the hard disk drive of which status is "Unconfigured Good".
Make Unconf Good	Make the selected hard disk drive in "Unconfigured Good" state. This is indicated on the hard disk drive of which status is "Unconfigured Bad".
Prepare Removal:	Make the power status of the selected hard disk drive in "Powersave" state. This is indicated on the hard disk drive of which power status is "On" and the status is "Unconfigured Good".
Undo Removal:	Make the power status of the selected hard disk drive in "On". This is indicated on the hard disk drive of which power status is "Powersave".
Make Drive Offline:	Make the selected hard disk drive in "Offline" state. This is indicated on the hard disk drive of which status is "Online".
Make Drive Online:	Make the selected hard disk drive in "Online" state. This is indicated on the hard disk drive of which status is "Offline".
Rebuild Drive:	Start rebuilding VD that contains the selected hard disk drive. This is indicated for the hard disk drive of which status is "Offline".
Mark as Missing:	Remove the VD that contains the selected hard disk drive from the DG. This is indicated on the hard disk drive of which status is "Offline".

IMPORTANT: The RAID Controller does not support Events feature.

Configuration Wizard

Use this wizard to configure a virtual drive using the hard disk drives connected. The detailed explanation of this feature is given in "Configuring Virtual Drive".

Controller Selection

If one or more RAID controllers are installed in the server, you need to select an adapter controlled by WebBIOS to configure each adapter. Clicking [Controller Selection] on WebBIOS top menu opens the [Adapter Selection] screen.

Physical View / Logical View

If the virtual drive has been configured, DG (drive group) is displayed on WebBIOS Top Menu. Clicking [Physical View] displays information for hard disk drives in DG. Clicking [Logical View] displays virtual drive in DG.

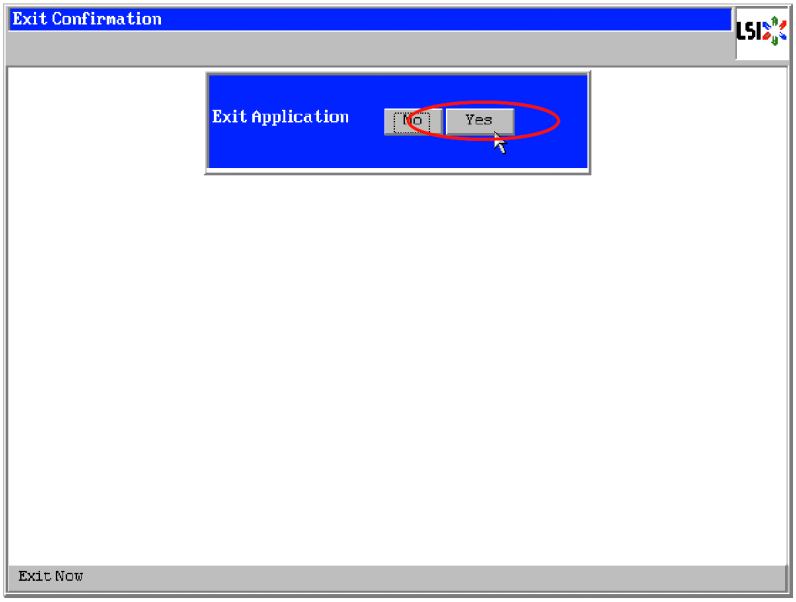
Events

The Events screen is used to confirm the system events.

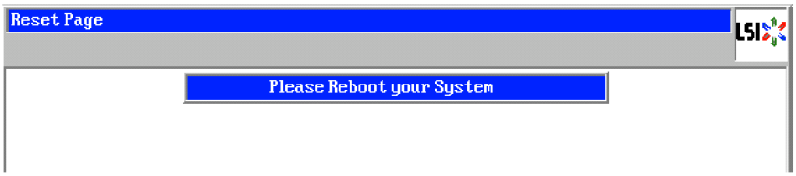
IMPORTANT: The RAID Controller does not support Events feature.

Exit

When you click [Exit] on WebBIOS Top Menu, a confirmation screen to exit from WebBIOS is displayed. Click [Yes] to exit from WebBIOS.



The screen as shown below appears when WebBIOS is terminated. Restart the server.

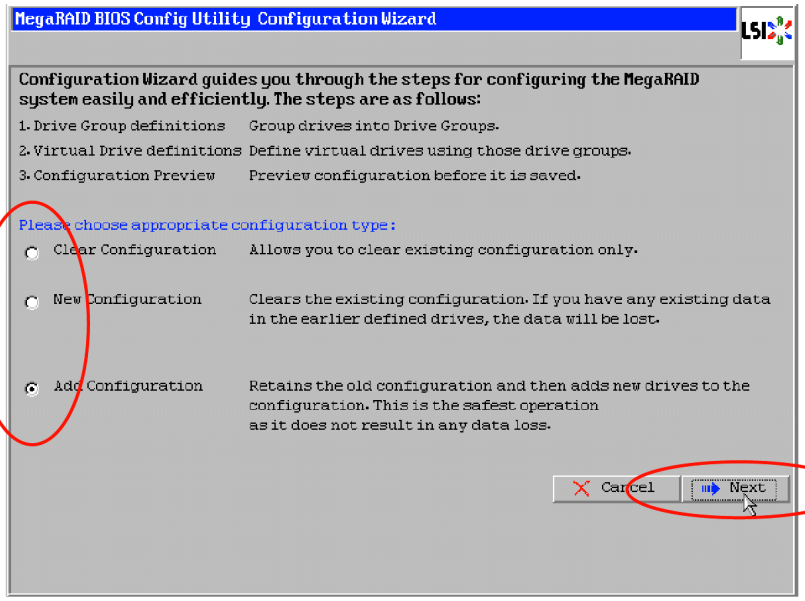


Configuring Virtual Drive

This section describes the procedures for configuration of VD (virtual drive) using WebBIOS.

Configuration Wizard

When you click [Configuration Wizard] on WebBIOS Top Menu, the screen as shown below appears. Select the relevant operation, and click [Next] at lower right of the screen.

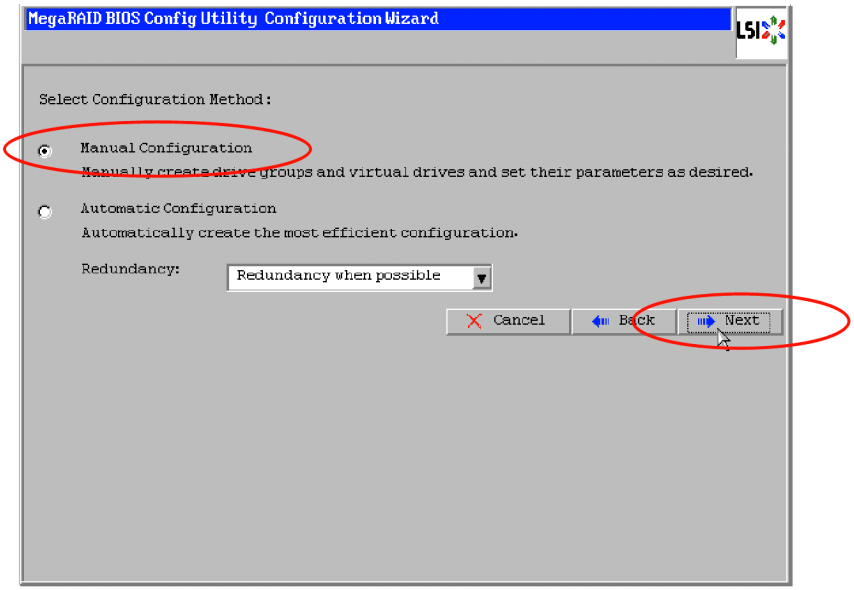

MegaRAID BIOS Config Utility Configuration Wizard
Configuration Wizard guides you through the steps for configuring the MegaRAID system easily and efficiently. The steps are as follows:
1. Drive Group definitions Group drives into Drive Groups.
2. Virtual Drive definitions Define virtual drives using those drive groups.
3. Configuration Preview Preview configuration before it is saved.
Please choose appropriate configuration type:
Clear Configuration Allows you to clear existing configuration only.
New Configuration Clears the existing configuration. If you have any existing data in the earlier defined drives, the data will be lost.
Add Configuration Retains the old configuration and then adds new drives to the configuration. This is the safest operation as it does not result in any data loss.
Cancel
Next

Clear Configuration :	Allows you to clear existing configuration (RAID information).
New Configuration :	Clears the existing configuration and creates a new VD.
Add Configuration :	Retains the old VD and then adds new virtual drive.

IMPORTANT: If you create a VD by New Configuration, any existing data in the earlier defined drives will be lost.

When you select [Add Configuration], the screen as shown below appears.

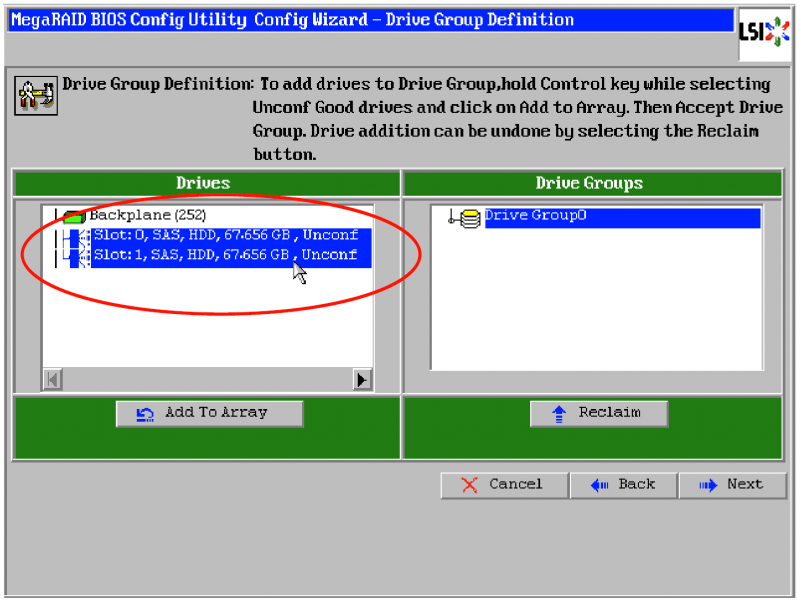
Be sure to select [Manual Configuration], and click [Next].



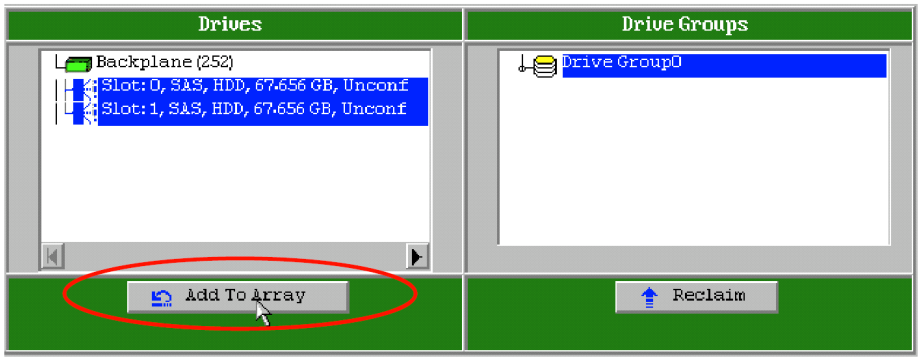
IMPORTANT: The RAID Controller does not support "Automatic Configuration" feature.

Use this menu to define several hard disk drives as a drive group (DG).

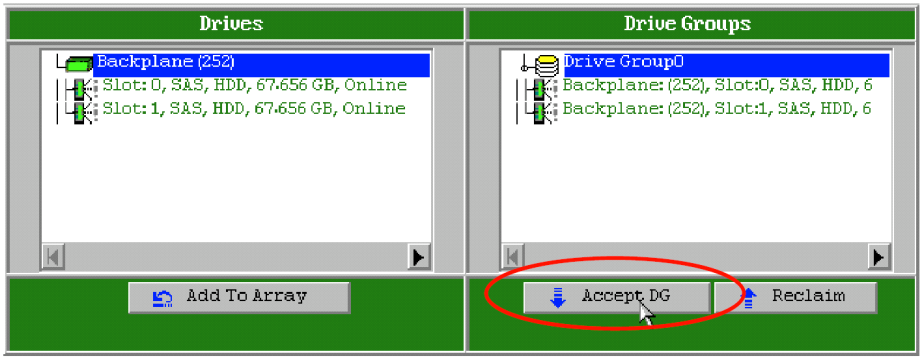
1. While pressing **Ctrl**, click the hard disk drives to be included in DG.


MegaRAID BIOS Config Utility Config Wizard – Drive Group Definition
Drive Group Definition: To add drives to Drive Group,hold Control key while selecting Unconf Good drives and click on Add to Array. Then Accept Drive Group. Drive addition can be undone by selecting the Reclaim button.
Drives
Drive Groups
Backplane (252)
Slot: 0, SAS, HDD, 67.656 GB , Unconf
Slot: 1, SAS, HDD, 67.656 GB , Unconf
Drive Group0
Add To Array
Reclaim
Cancel
Back
Next

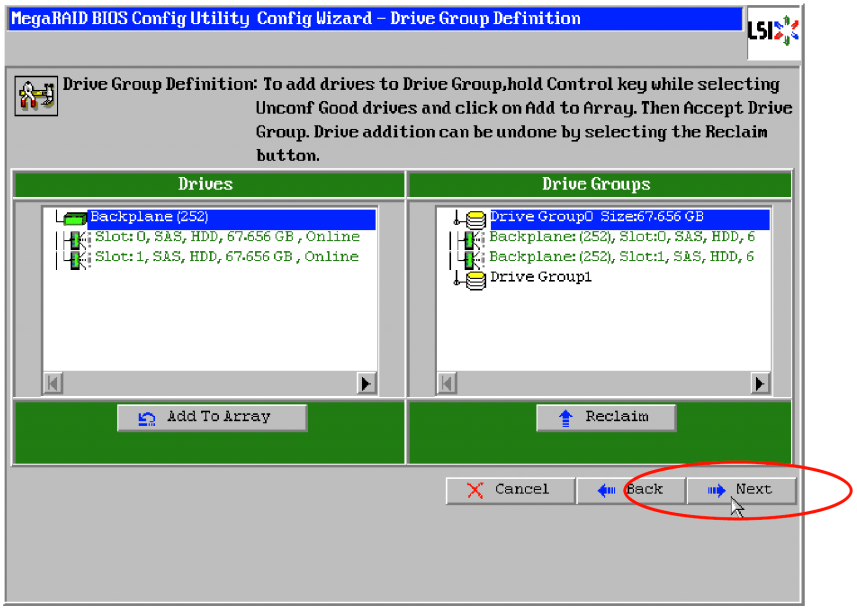
2. Upon completion of selection, click [Add to Array] at the lower left of the screen.



3. A new DG is defined in the Drive Groups frame. To define the new DG, click [Accept DG] at the lower right of the screen.

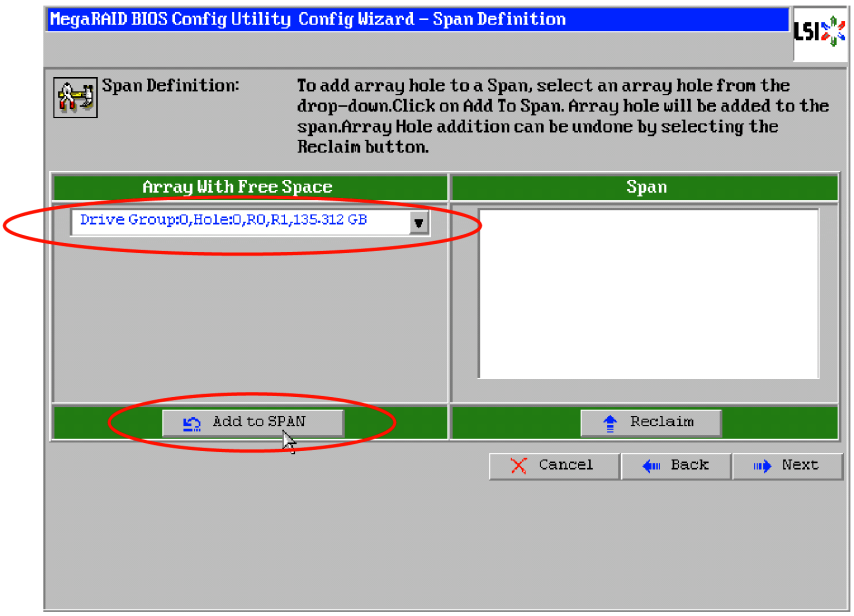


4. After the DG has been defined, click [Next] at the lower right of the screen.

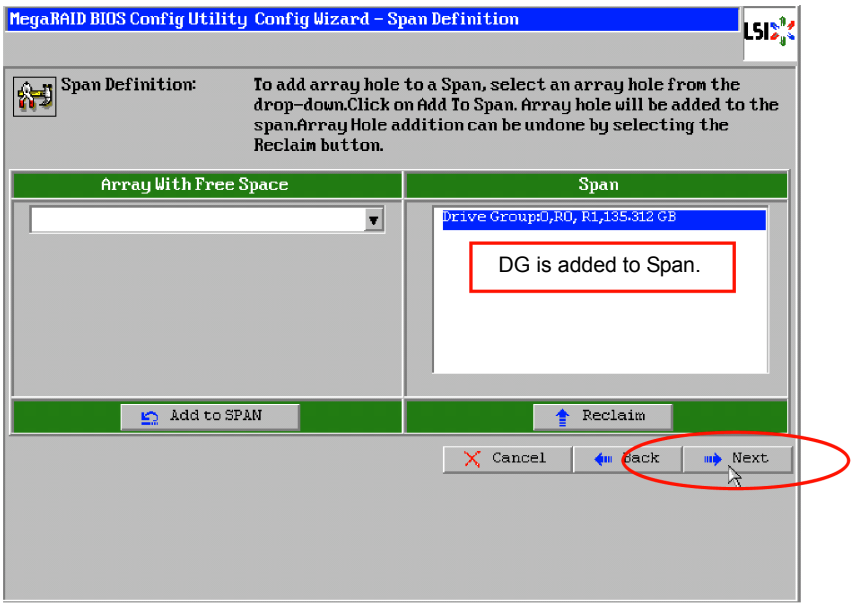

MegaRAID BIOS Config Utility Config Wizard – Drive Group Definition
Drive Group Definition: To add drives to Drive Group,hold Control key while selecting Unconf Good drives and click on Add to Array. Then Accept Drive Group. Drive addition can be undone by selecting the Reclaim button.
Drives
Drive Groups
Backplane (252)
Slot: 0, SAS, HDD, 67.656 GB , Online
Slot: 1, SAS, HDD, 67.656 GB , Online
Drive Group0 Size:67.656 GB
Backplane: (252), Slot:0, SAS, HDD, 6
Backplane: (252), Slot:1, SAS, HDD, 6
Drive Group1
Add To Array
Reclaim
Cancel
Back
Next

5. Then, the Span Definition screen appears.

6. Select a DG to define VD from "Array With Free Space" frame, then click [Add to SPAN]. The DG is defined in the "Span" field to the right.


MegaRAID BIOS Config Utility Config Wizard – Span Definition
Span Definition:
To add array hole to a Span, select an array hole from the drop-down.Click on Add To Span. Array hole will be added to the span.Array Hole addition can be undone by selecting the Reclaim button.
Array With Free Space
Span
Drive Group:0,Hole:0,R0,R1,135.312 GB
Add to SPAN
Reclaim
Cancel
Back
Next

7. After the Span has been defined, click [Next] at the lower right of the screen.

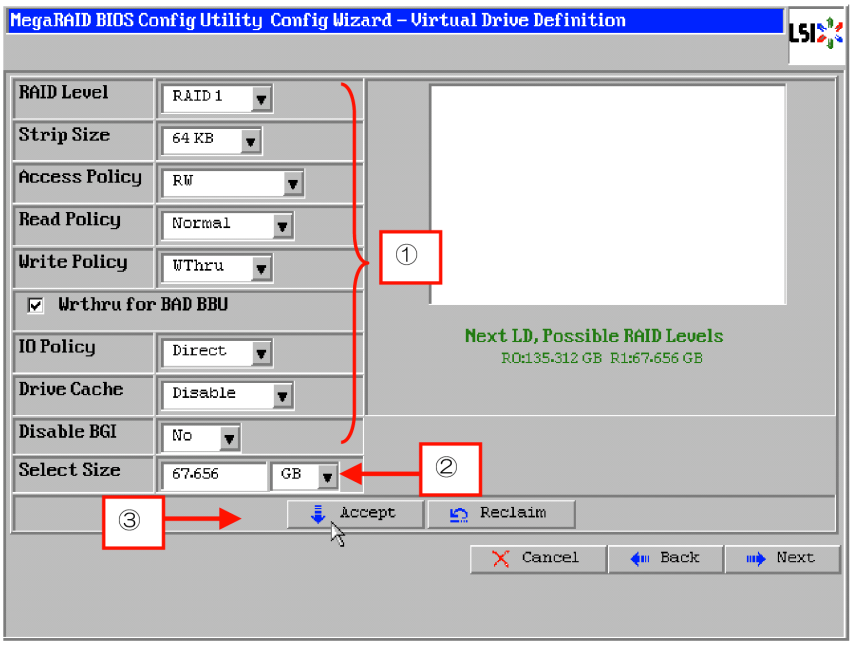

MegaRAID BIOS Config Utility Config Wizard – Span Definition
Span Definition:
To add array hole to a Span, select an array hole from the drop-down.Click on Add To Span. Array hole will be added to the span.Array Hole addition can be undone by selecting the Reclaim button.
Array With Free Space
Span
Drive Group:0,R0, R1,135.312 GB
DG is added to Span.
Add to SPAN
Reclaim
Cancel
Back
Next

IMPORTANT: To configure RAID0 or 1, perform Span Definition to a single DG only.

Define the virtual drive (VD) in DG that has been created in previous step. When DG was defined, [VD Definition] screen is displayed. In the "Next LD, Possible RAID Levels" column, available RAID levels and maximum size for VD are displayed.

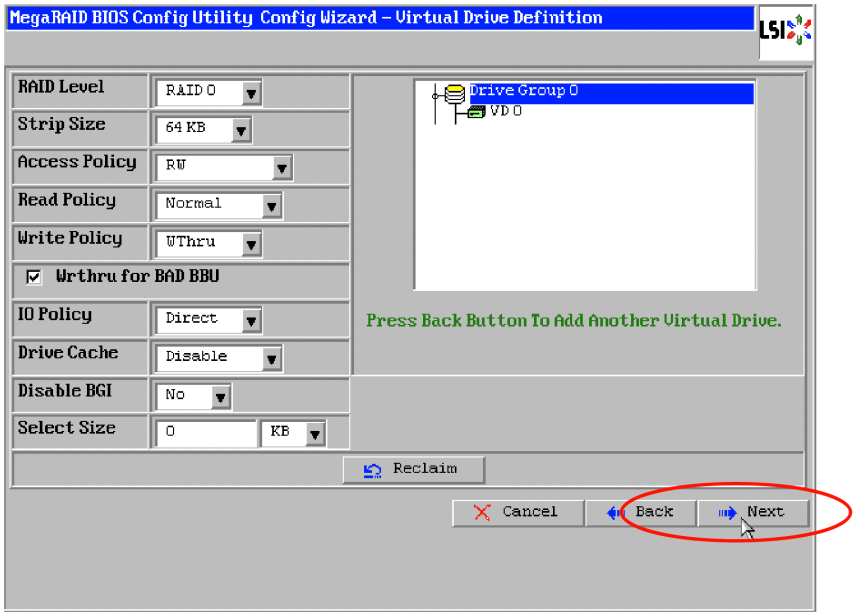
As an example, define a RAID1 VD of 67.656GB.

1. Specify the necessary parameters in left columns.
2. Enter "67.656" in "Select Size" field, and select "GB" as a unit.
3. Click [Accept] at the lower center of the screen.
4. If you want to define another VD, click [Back] and repeat steps starting from Span Definition screen.



IMPORTANT: The value shown in "Select Size" indicates the maximum size allowed for RAID1 (two hard disk drives). You need to specify the maximum size for any other RAID levels according to "Next LD, Possible RAID Levels".

5. Upon completion of VD definition, click [Next].

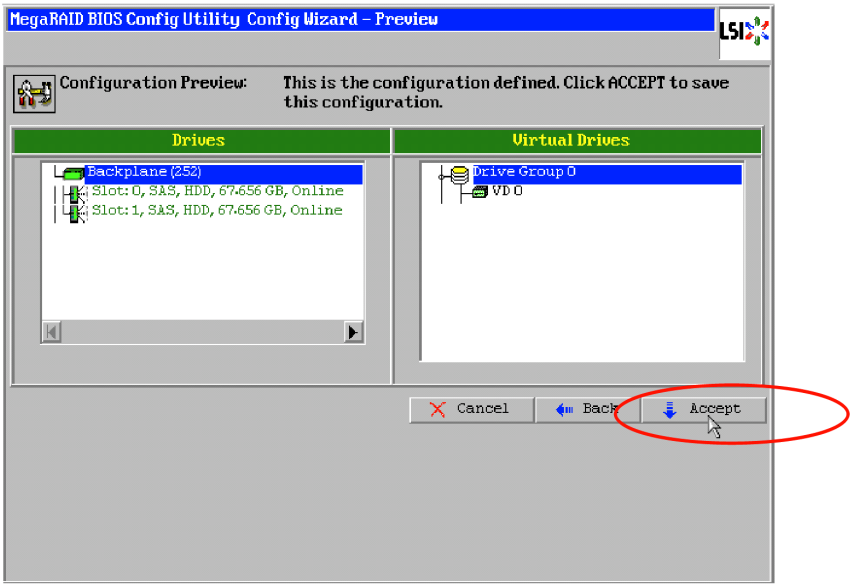


IMPORTANT:

- RAID1 may be configured with three or more hard disk drives in drive group. However, with this controller, the drive group must contain only two hard disk drives.
- RAID00 is not supported.

6. VD is created in DG as shown in the screen below.

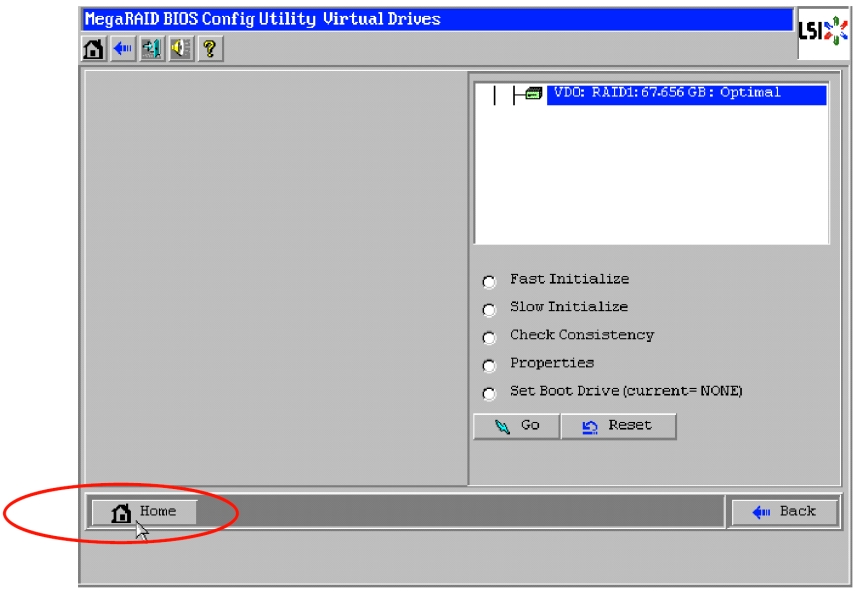
After making sure that the VD is created correctly, click [Accept] at the lower right of the screen.



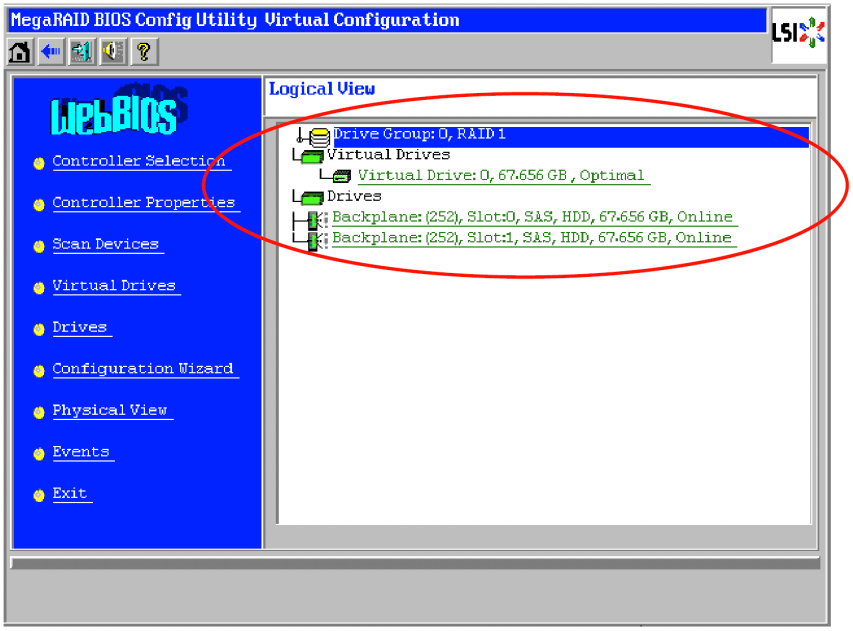
7. The confirmation message "Save this Configuration?" appears. Click "Yes" to save the configuration.

8. The confirmation message "Want to Initialize the New Virtual Drives?" appears. To perform "Fast Initialize", select "Yes".

9. "Virtual Drives" operation screen is displayed. If no other operation is required, click [Home] at the lower left of the screen.



10. WebBIOS Top Menu is displayed. Virtual Drives you have created is displayed in the right frame of the screen.



Parameters for VD Definition

Listed below are parameters for Configuration Wizard.

Item	Parameter	Remarks
RAID Level	**RAID 0** / **RAID 1**	RAID 00 is not supported.
Strip Size	8 KB / 16 KB / 32 KB / **64 KB** / 128 KB / 256 KB / 512 KB / 1024 KB	Recommended value: 64KB
Access Policy	**RW** / Read Only / Blocked	Recommended value: RW
Read Policy	**Normal** / Ahead / Adaptive	Recommended value: Normal
Write Policy	**WBack** / **Wthru**	WBack: WriteBack WThru: WriteThru
WrtThru for BAD BBU	**Checked** / Unchecked	Select a mode when WriteBack is specified for Write Policy. Checked: Normal WriteBack Unchecked: Constant WriteBack Recommended value: Checked
IO Policy	**Direct** / Cached	Recommended value: Direct
Disk Cache Policy	Unchanged / Enabled / **Disabled**	Recommended value: Disabled
Disable BGI	**No** / Yes	Specify whether to perform Background Initialize after creation of VD. Recommended value: No

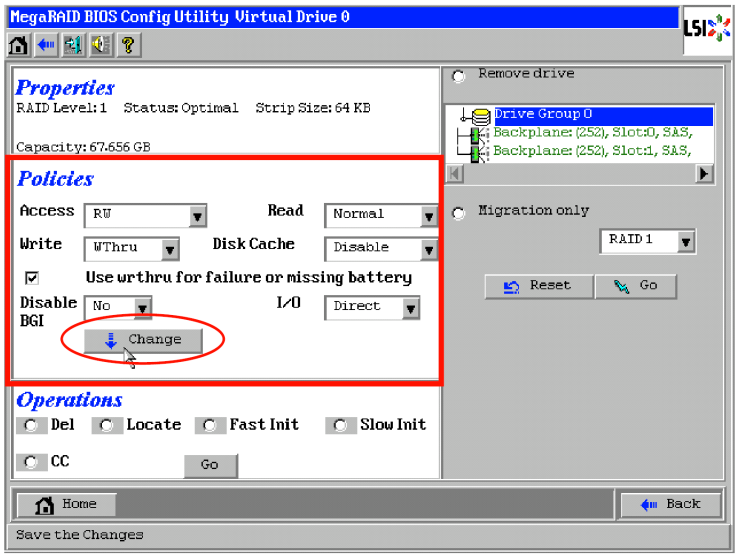
The Write Policy has the following modes depending on combination with WrtThru for BAD BBU. Select a mode suitable for your environment.

		WrtThru for BAD BBU	
		Checked	**Unchecked**
Write Policy	WBack	Normal write back mode * The controller operates in write through mode.	Constant write back mode The controller always uses cache memory for writing regardless of battery charged status or existence of battery. Be sure to use UPS when specifying this mode for write policy.
	WThru	Write through mode The controller does not use cache memory for writing data. This mode can provide the highest data security, however, the writing performance is lower than that in write back mode.	* This mode is unavailable. If you do not check "WrtThru for BAD BBU" at creation of VD, this item is automatically checked after the VD has been created.

IMPORTANT:

- If constant write back mode is selected, the controller operates in write back mode even if the battery has failed, insufficiently charged, or no battery has been installed. The data in cache memory may be lost at an occurrence of power failure.
- Be sure to use UPS when specifying the constant write back mode for write policy.

You can change parameters for VD definition except for RAID Level and Stripe Size. On the WebBIOS Top Menu, click [Virtual Drives] and specify parameters in "Policies" frame, then click [Change].

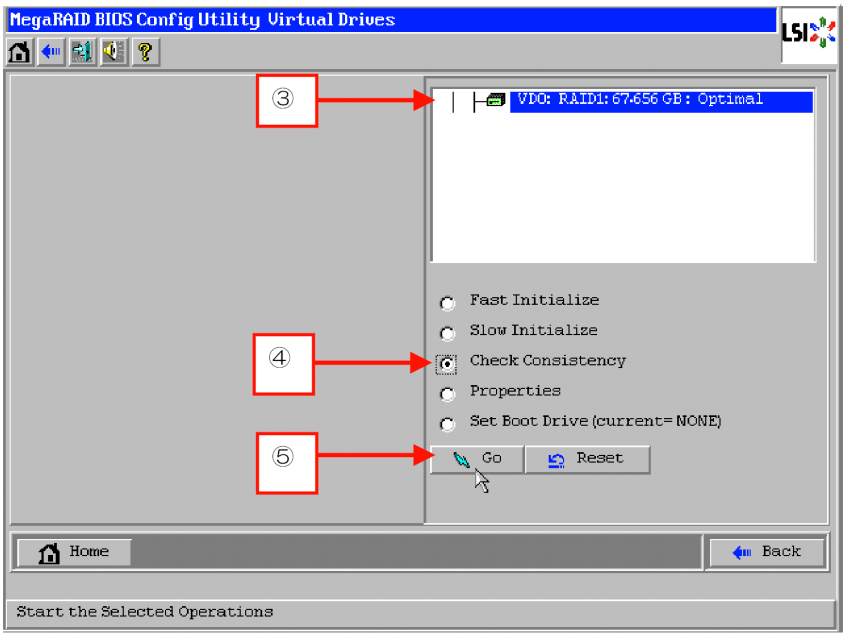


Operation of Various Features

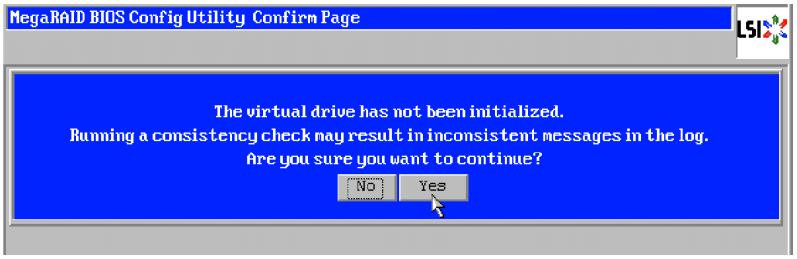
Check Consistency

Check Consistency is used to check consistency among virtual drives.

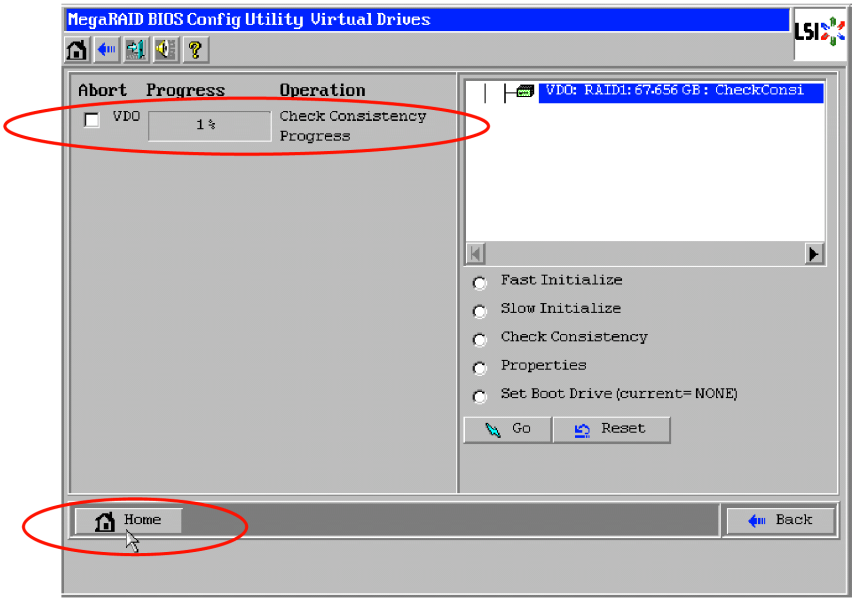
1. Start WebBIOS.
2. Click [Virtual Drives] on WebBIOS Top Menu.
3. Select a VD to perform Check Consistency from the upper right frame of Virtual Drives screen.
4. Click the checkmark column for Check Consistency from the lower right frame of Virtual Drives screen.
5. Make sure that Check Consistency is checked, and click [Go].



6. Inconsistency may be detected at the first Check Consistency performed after the VD was configured. If the following alert is displayed, click [Yes] to perform Check Consistency. A lot of inconsistency may be detected, however, it is not a failure.


MegaRAID BIOS Config Utility Confirm Page
The virtual drive has not been initialized.
Running a consistency check may result in inconsistent messages in the log.
Are you sure you want to continue?
No
Yes

7. The progress of Check Consistency is displayed on the left frame of Virtual Drives screen.
8. Click [Home] at the lower left of Virtual Drives screen to return to the Top Menu.



IMPORTANT: A lot of inconsistency may be detected at the first Check Consistency performed after the VD was configured due to inconsistencies in the unused area. In such a case, an alert may be logged.

Manual Rebuild

Rebuild can be performed automatically when the failed hard disk drive is replaced in hot-swap mode. However, if the failed hard disk drive is replaced after turning off the power of the server, Rebuild will not start automatically. Use Manual Rebuild feature to recover the virtual drives as described below.

IMPORTANT:

- To perform rebuild by replacing the hard disk drive in hot-swap mode, be sure to replace the device while the operating system or WebBIOS is running.
- You can view the progress of rebuild process on Universal RAID Utility screen or click [Virtual Drive] on WebBIOS Top Menu.
- With the progress indication being displayed, the rebuild may be processed at slow rate. Go to WebBIOS Top Menu after making sure the rebuild progress.

Described below are procedures based on assumption:
One of the hard disk drives failed in a RAID1 VD configured with two hard disk drives.

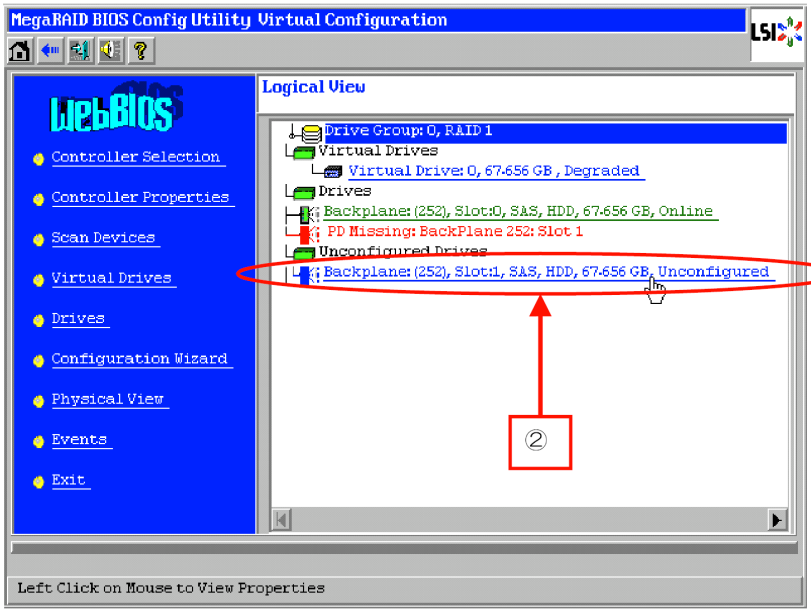
Replace the failed hard disk drive with new one after turning off the power of the server. Auto Rebuild feature is disabled for non-hot-swap replacement. Use Manual Rebuild feature to recover the virtual drives as described below.

1. Start WebBIOS.

   Make sure that the status for the replaced hard disk drive is indicated as "Unconfigured Good" in the right frame of the Top Menu.

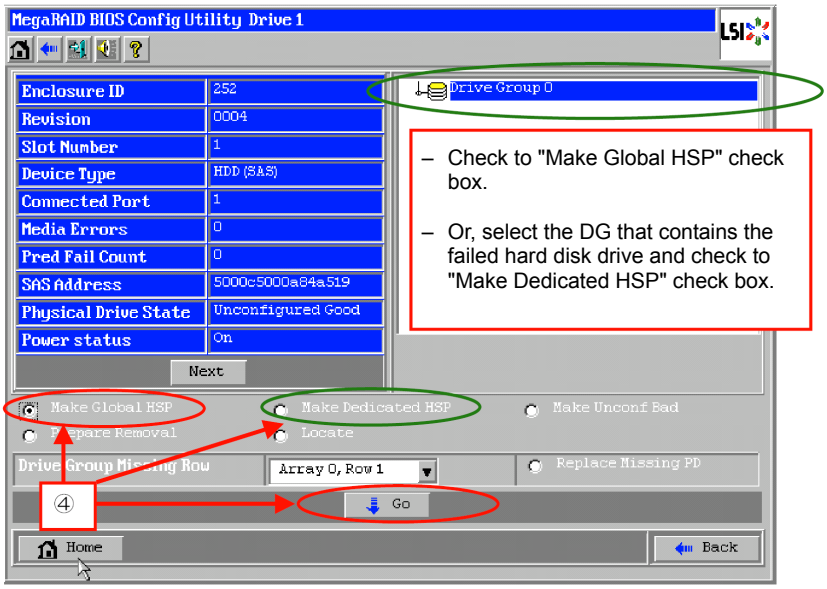
   In the example below, the hard disk drive in slot number 1 has been replaced.
   The indication "PD Missing: BackPlane 252: Slot 1" represents that the hard disk drive in VD having been installed in slot number 1 was removed.

2. Select the newly connected hard disk drive (the hard disk drive in slot number 1 in the example) from the right frame of Top Menu.

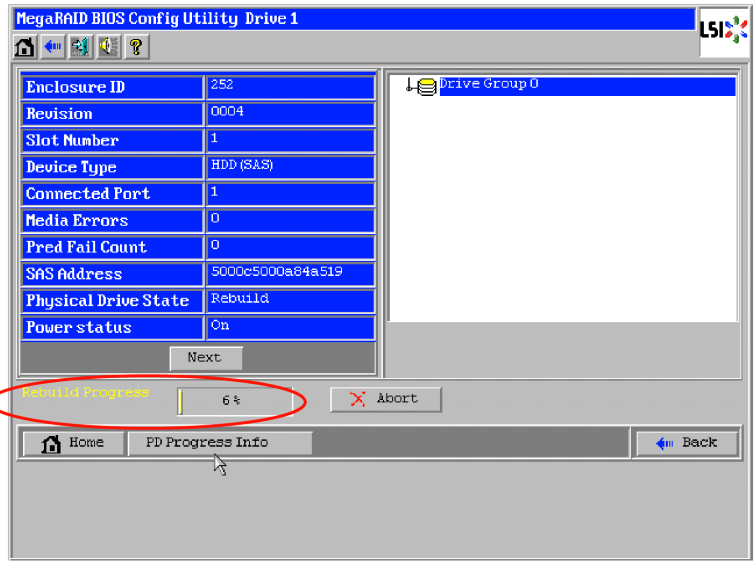


3. The properties for Physical Drive is displayed.

4. Check to "Make Global HSP" or select the DG you want to rebuild and check to "Make Dedicated HSP", and then click [Go] on the lower center of the screen.

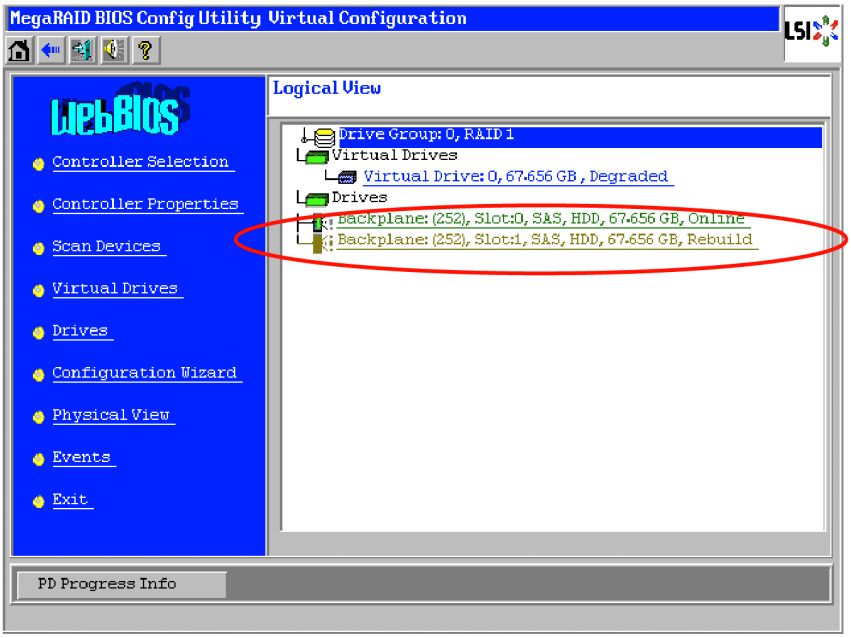


5. When [Rebuild Progress] is displayed, click [Home] at the lower left of the screen to go back to WebBIOS Top Menu.

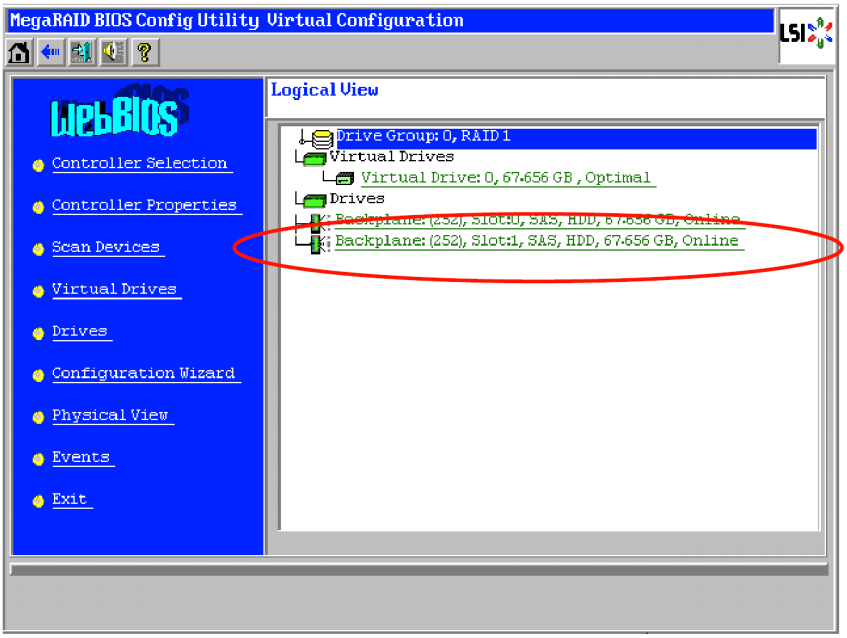


IMPORTANT: Click [Home] while the background task such as Consistency Check, Rebuild, or Reconstruction is being executed. With the progress indication being displayed, the background task may be processed at slow rate.

6. The WebBIOS Top Menu changes as shown below during rebuild. If you click on Physical Drive being rebuilt, the progress of rebuild is displayed.



7. When the rebuild completes, the status for the Physical Drive is "Online" and that of the Virtual Drive is "Optimal".



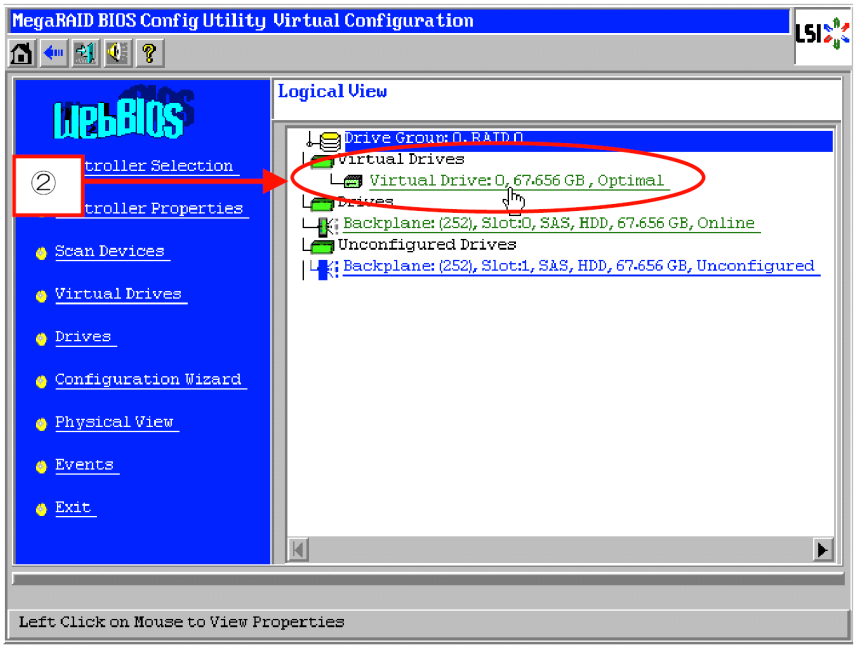
Reconstruction

Described below are procedures based on assumption:
Add a hard disk drive to a RAID0 VD configured with one hard disk drive to make a RAID1 VD configured with two hard disk drives.

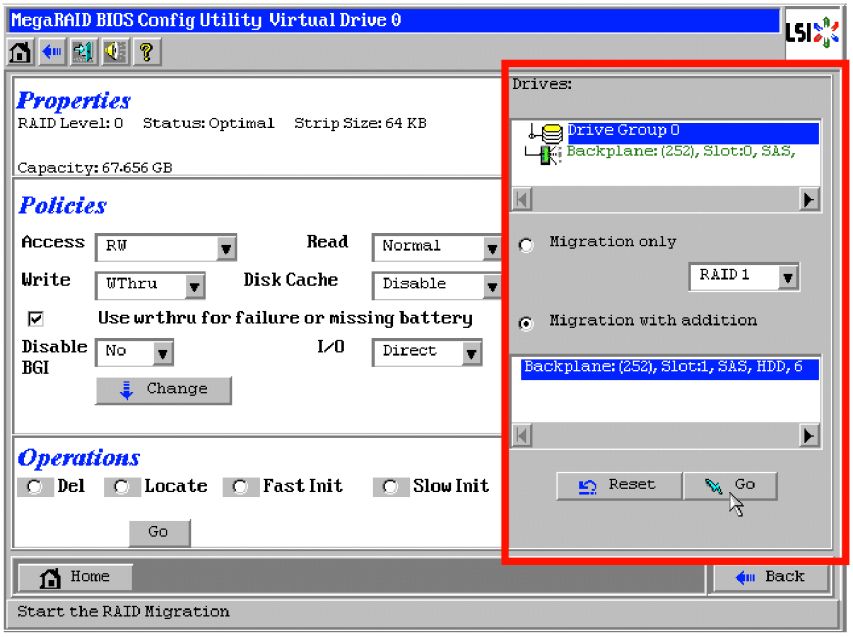
1. Start WebBIOS.

   Make sure that the status for the added hard disk drive is indicated as "Unconfigured Good" in the right frame of the Top Menu.

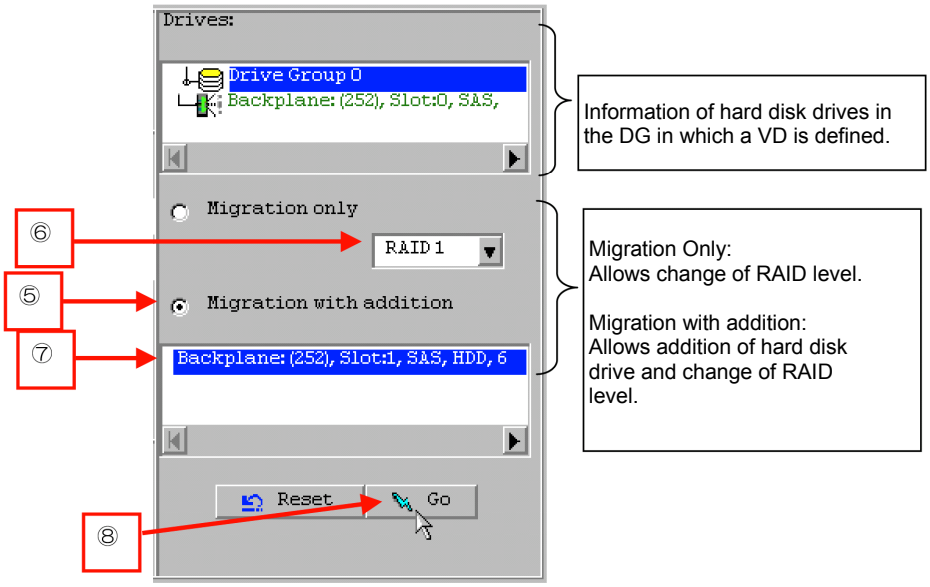
2. Select a VD you want to reconstruct (VD 0 in the example) from the right frame of Top Menu.



3. Setting menu for VD is displayed.



4. On the right of the screen, items required for reconstruction are displayed.



5. Select "Migration with addition".
6. Specify the RAID level used after reconstruction.
7. Select a hard disk drive to be added.
8. When you finished Steps 5 to 7, click [Go] at the lower right of the screen.
9. The progress of reconstruction is displayed on the lower left of the screen. Click [Home] at the lower left of the screen to return to the WebBIOS Top Menu.

IMPORTANT:

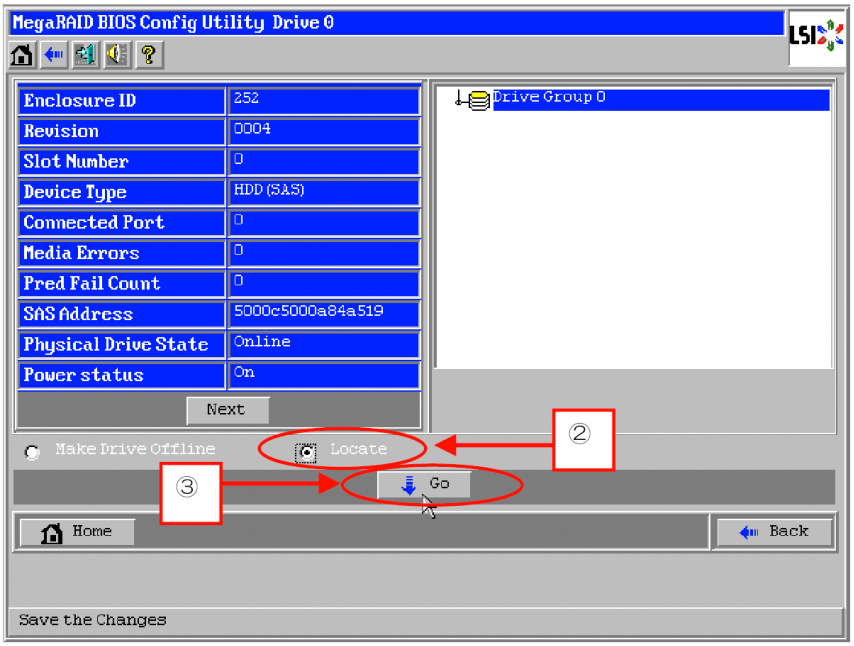
- The capacity of virtual drive may be incorrectly displayed after reconstruction. In this case, perform Scan Devices from the Top Menu.
- Click [Home] while the background task such as Consistency Check, Rebuild, or Reconstruction is being executed. With the progress indication being displayed, the background task may be processed at slow rate.

Locate

The Locate command makes an LED on hard disk drive light or blink to confirm the location of the slot. We recommend you to check the slot of hard disk drive before adding VD or hot spare disks, reconstructing VD, or replacing hard disk drive.

How to execute Locate command on WebBIOS

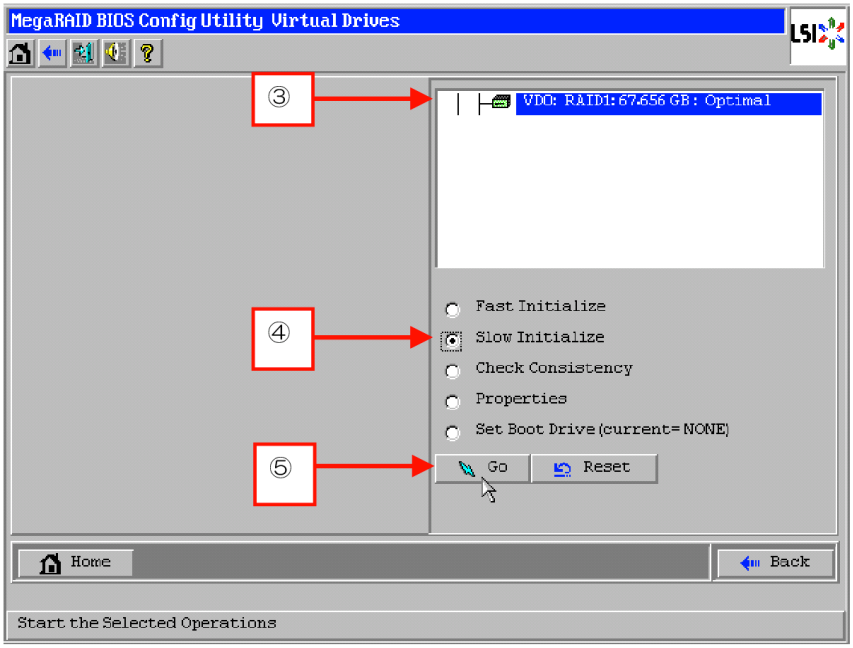
1. Click a Physical Drive to check the location on the WebBIOS Top Menu.
2. The Physical Drive properties are displayed. Click [Locate].
3. Click [Go]. The LED of the hard disk drive lights or blinks.



Slow Initialize

Slow Initialize writes zero to all the sectors of the data area in the VD.

1. Start WebBIOS.
2. Click [Virtual Drives] on the WebBIOS Top Menu.
3. Select a VD to perform Slow Initialize from the upper right frame of the Virtual Drives screen.
4. Click the checkmark column for Slow Initialize from the lower right frame of the Virtual Drives screen.
5. Make sure that Slow Initialize is checked, and click [Go].



IMPORTANT:

- To create a VD using the Configuration Wizard of WebBIOS, execute Fast Initialize to clear the first sector that contains partition information.
- Slow Initialize takes a long time to complete.

WebBIOS and Universal RAID Utility

You can use Universal RAID Utility for configuration and management, monitoring of RAID System after start up operating system.

The point to be kept in mind when using Universal RAID Utility together with WebBIOS is as follows.

Terms

Terms used in WebBIOS differs from those used in Universal RAID Utility.

When you use Universal RAID Utility together with WebBIOS, substitute terms according to the following list.

Term of WebBIOS	Term of Universal RAID Utility
Adapter	RAID Controller
Virtual Drive	Logical Drive
Drive Group	Disk Array
Physical Drive	Hard disk drive

Number and ID

The number to manage each component of RAID System used in Universal RAID Utility differs from that used in WebBIOS.

Adapter and RAID Controller

WebBIOS manages Adapter by a number beginning with 0. You can see a number of Adapter where [Adapter No] in [Adapter Selection] menu.

Universal RAID Utility manages RAID Controller by a number beginning with 1. You can see a number of RAID Controller where [Number] in the property of RAID Controller on RAID Viewer or [RAID Controller #X] in the property of RAID Controller on raidcmd.

In addition, you can see the number of Adapter managed by WebBIOS where [ID] in the property of RAID Controller by Universal RAID Utility.

Virtual Drive and Logical Drive

WebBIOS manages Virtual Drive by a number beginning with 0. You can see a number of Virtual Drive where [VD X] in Virtual Drives.

Universal RAID Utility manages Logical Drive by a number beginning with 1. You can see a number of Logical Drive where [Number] in the property of Logical Drive on RAID Viewer or [RAID Controller #X Logical Drive #Y] in the property of Logical Drive on raidcmd.

In addition, you can see the number of Logical Drive managed by WebBIOS where [ID] in the property of Logical Drive by Universal RAID Utility.

Disk Array

WebBIOS manages Disk Array by a number beginning with 0. You can see a number of Disk Array where [DG X] in Physical Drives and Virtual Drives.

Universal RAID Utility manages Disk Array by a number beginning with 1. You can see a number of Disk Array where [Disk Array] in the property of Logical Drive on RAID Viewer or [RAID Controller #X Disk Array #Y] in the property of Disk Array on raidcmd.

Physical Drive and Hard Disk Drive

WebBIOS manages Physical Drive by two numbers (Slot number and Connector number, beginning with 0). You can view these numbers shown by [x:x:x] in Physical Drives box. You can view these numbers on Physical Drives properties.

Universal RAID Utility manages hard disk drive by a number beginning with 1 and ID, Enclosure number, and Slot number. The numbers of hard disk drives connected to the controller are sorted in ascending order based on ID and assigned number beginning with 1, starting from the smallest number. The ID is same value of Slot number shown in WebBIOS. Enclosure number and Slot number are assigned with a number beginning with 1. To view these numbers on Universal RAID Utility, select properties of the hard disk drive and see [Number] and [ID], [Enclosure], and [Slot] (RAID Viewer), or [RAID Controller #X Physical Drive #Y] and [ID], [Enclosure], and [Slot] (raidcmd).

Setting of Priority

WebBIOS displays and sets Rebuild Priority, Patrol Read Priority, and Consistency Check Priority of RAID Controller by percentage. However, Universal RAID Utility uses three levels as High/Middle/Low for them.

NOTES:

- WebBIOS can set BGI Rate (Background Initialize Priority). However, Universal RAID Utility cannot set it.
- Universal RAID Utility can set Initialization Priority. However, Internal RAID Controller does not have the function of the setting of Initialization Priority. Therefore, Universal RAID Utility does not display [Initialization Priority] in the [Options] tab of RAID Viewer. In addition, you will fail if you change the Initialization Priority by raidcmd.

See the table below for correspondence.

Setting value of WebBIOS and the display level of Universal RAID Utility

Item	Setting value of WebBIOS	Universal RAID Utility level
Rebuild Priority Rebuild Rate (WebBIOS)	80 to 100	High
	31 to 79	Middle
	0 to 30	Low
Patrol Read Priority Patrol Read Rate (WebBIOS)	80 to 100	High
	31 to 79	Middle
	0 to 30	Low
Consistency Check Priority CC Rate (WebBIOS)	80 to 100	High
	31 to 79	Middle
	0 to 30	Low

Setting level of Universal RAID Utility and the setting value

Item	Setting level of Universal RAID Utility	Setting value
Rebuild Priority Rebuild Rate (WebBIOS)	High	90
	Middle	50
	Low	10
Patrol Read Priority Patrol Read Rate (WebBIOS)	High	90
	Middle	50
	Low	10
Consistency Check Priority CC Rate (WebBIOS)	High	90
	Middle	50
	Low	10

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Chapter 5

Installing the Operating System with Express Setup

This section describes information on using Express Setup to install and configure the following operating systems to server.

- Windows Server 2008 Standard 32-bit (x86) Edition / Windows Server 2008 Enterprise 32-bit (x86) Edition
- Windows Server 2003 R2 Standard Edition / Windows Server 2003 R2 Enterprise Edition

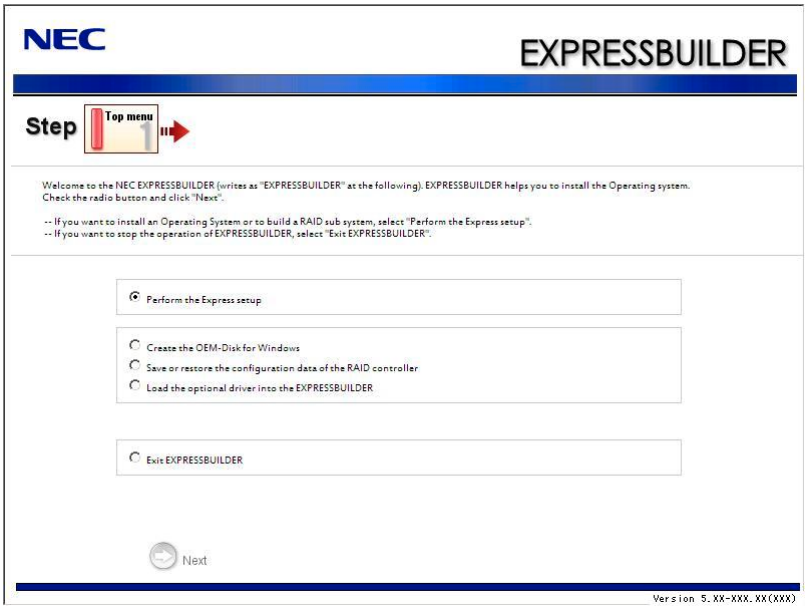
To use the server with the other operating systems described in this section, contact your service representative.

> **IMPORTANT:** Before installing the operating system, adjust the system date and time by using the BIOS setup utility "SETUP." See Chapter 4 for detail.

About Express Setup

"Express Setup" helps you to install the Windows Operating System. The setup automatically configures the RAID System and installs the Operating System and some management software.

IMPORTANT: Executing the Express Setup erases all data on the hard disk drive.


NEC
EXPRESSBUILDER
Step
Top menu
Welcome to the NEC EXPRESSBUILDER (writes as "EXPRESSBUILDER" at the following). EXPRESSBUILDER helps you to install the Operating system.
Check the radio button and click "Next".
-- If you want to install an Operating System or to build a RAID sub system, select "Perform the Express setup".
-- If you want to stop the operation of EXPRESSBUILDER, select "Exit EXPRESSBUILDER".
Perform the Express setup
Create the OEM-Disk for Windows
Save or restore the configuration data of the RAID controller
Load the optional driver into the EXPRESSBUILDER
Exit EXPRESSBUILDER
Next
Version 5.XX-XXX.XX(XXX)

You can also use "Parameter File" at "Express Setup" in order to save or backup parameters for installation.
If you want to set up the server as before, execute the Express Setup with the parameter file you have saved before.

NOTES:

- If you want to create a parameters file, have a blank floppy disk (MS-DOS 1.44MB format) ready.
- When using a floppy disk, a USB floppy disk drive is required.
- If you want to use the drivers located on the "OEM-Disk for Mass Storage Device" that ships with optional boards, a parameters file is mandatory.
- You can create a parameters file in advance using "Parameter File Creator" included in NEC EXPRESSBUILDER.

Windows Server 2008

This section explains how to install Windows Server 2008 by using the Express Setup.

NOTES:

- Express Setup does not support the installation of Windows Server 2008 64-bit(x64) Edition. If you want to install it, see Appendix B.
- If you install Windows Server 2008 without using Express Setup, see Appendix B.

Notes on Windows Installation

This section explains the notes on the Windows installation.

Confirm these notes before starting the Express Setup.

About the Windows Family

This computer supports the following Windows editions:

- Windows Server 2008 Standard 32-bit (x86) Edition / Windows Server 2008 Enterprise 32-bit (x86) Edition (hereinafter, referred to as "Windows Server 2008")

NOTE: Express Setup does not support the installation of Windows Server 2008 64-bit (x64) Edition. If you want to install it, see Appendix B.

On installing other OS, contact sales dealer or the maintenance service representative.

BIOS Settings

Confirm the BIOS settings described in Chapter 4 before installing Windows Server 2008.

Service Pack Which EXPRESSBUILDER Supports

The NEC EXPRESSBUILDER DVD attached to the server supports following combination of the OS installation media and Service Pack.

- Windows Server 2008
  - OS installation media (No Service Pack)

Supported Mass Storage Controllers

The NEC EXPRESSBUILDER DVD attached to your system supports the following mass storage controllers for installation.

- Controllers supporting installation of OS with Express Setup
  - N8403-026 (RAID Controller)
  - N8403-027 (SATA Interface card)
  - N8403-018 FibreChannel Controller*
- Other controllers
  - N8403-018 FibreChannel Controller*

  * Option

About the Hardware Components

When you install the Windows Server 2008, Express Setup requires several preparations if this computer uses the following hardware components.

Installing on the Mirrored Volume

When re-installing the OS to a hard disk drive which has been upgraded to Dynamic Disk, only the simple dynamic volume is available for installation.

If you want to install the OS on a volume that is mirrored using Disk Management, invalidate the mirroring and reset to the basic disk before the installation, and validate the mirroring again after the installation.

You can create, invalidate, or delete the mirror volume by using Disk Management in Computer Management.

Re-installing to the hard disk drive which has been upgraded to Dynamic Disk

You cannot re-install Windows Server 2008 with the current partition of the hard disk drive upgraded to Dynamic Disk kept remained.

If you want to keep the current partition remained, see Appendix B to re-install the system.

Case of using N8403-026 (RAID Controller), N8403-027 (SATA Interface card)

If you use N8403-026 (RAID Controller), N8403-027 (SATA Interface card), creating new RAID and installing Windows Server 2008 by Express Setup, the setup may be failed.

If you create new RAID, refer to following procedure and create RAID beforehand.

- Creating RAID manually

  Refer to [RAID Configuration (Chapter 4)].

- Creating RAID using EXPRESSBUILDER

  Refer to "Creating new RAID using N8403-026 (RAID Controller), N8403-027 (SATA Interface card) (Page 5-54)".

SAN Boot

If you use SAN boot, confirm BIOS Setup before setup Windows.

- If you use SAN boot with N8403-027, set following BIOS setting.

  [Advanced] → [Peripheral Configuration] → [SATA AHCI] and [SATA RAID] change to [Disabled].

- If you use SAN boot with N8403-026, set following BIOS setting.

  [Advanced] → [PCI Configuration] → Option ROM Scan [Enabled] → [Disabled]

> **IMPORTANT:** After executing [Load Setup Defaults], set this BIOS setting. If you do not set up BIOS setting, you could not install Windows.

About the System Partition Size

When the system is Windows Server 2008 32-bit (x86) Edition

Required partition size	=	size required to install OS + paging file size + dump file size + application size
Size required to install OS	=	6,300MB (Full Installation) or = 2,200MB (Server Core Installation)
Paging file size (recommended)	=	Installed memory size x 1.5
Dump file size	=	Installed memory size + 300MB
Application size	=	Required size

IMPORTANT:

- The above-mentioned paging file size is recommended for collecting debug information (memory dump). The paging file with initial size large enough to store the dump file in the boot drive is required.
  Correct debug information might not be able to be collected due to virtual memory shortage when the paging file is insufficient, so set an enough size of the paging file with the entire system.
- The maximum paging file size which can be set on one partition is 4095MB. If the above paging file size exceeds 4095MB, specify 4095MB for the paging file size.
- The maximum dump file size for the system with more than 2GB memory mounted is '2048MB + 300MB'.
- If you install any application program or the like, add necessary space to the partition to install these programs.

Example:

The partition size required for a system with an installed memory size of 512 MB and a full installation of the operating system:

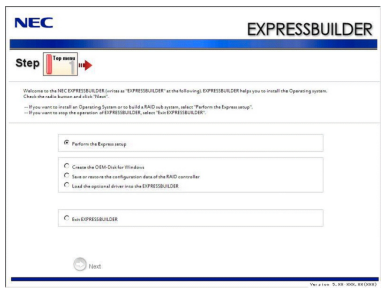
6,300MB + (512MB x 1.5) + 512MB + 300MB + application size
= 7,880MB + application size.

If the partition where the operating system is installed is smaller than that required to install the OS and paging file, expand the partition size or utilize a larger disk. If your system does not have a sufficient dump file size, divide the required file space into multiple disks by performing the steps below:

1. Set the partition size to a size sufficient to install the OS and paging file.
2. See "Setting for Solving Problems" to write the debug information of the dump file on to another disk.

If there is not enough disk space to write the debug information, add another disk for the dump file.

Flow of Setup



Loading parameters (Step 2)

Skip

Next

Select the operating system (Step 3)

Next

RAID configuration (Step 4)

Next

Windows Confirm Setting / Input
(Steps 5 to 10)

Next

Save parameters (Step 11)

Next

Start Express Setup (Step 12)

Perform

RAID Configuration

Create the OS partition / format

Copying Windows driver
↓
Copying Selected Application

Remove the Floppy Disk and CD/DVD-ROM from the Drive

Insert Windows CD-ROM

Install OS Automatically

Agree Software License Agreement

Log on

The installation is completed.

: Process that needs to input or select

: Process that proceeds automatically

Installing the Windows Server 2008

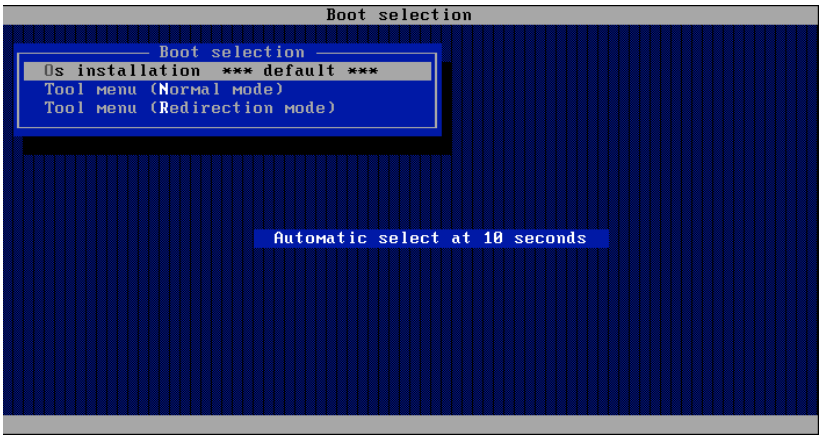
Express Setup proceeds the setup by selecting or inputting several parameters on the wizard. You can also save the parameters to a floppy disk as a parameters file.

1. Turn the power of peripheral device on, and then turn on the server.
2. Insert the NEC EXPRESSBUILDER DVD into the optical disk drive of the server.
3. Press the RESET switch or press Ctrl, Alt, and Delete to reboot from the NEC EXPRESSBUILDER. (You may also turn off and then on again to reboot the server.)

   The system will boot from the DVD and NEC EXPRESSBUILDER starts.

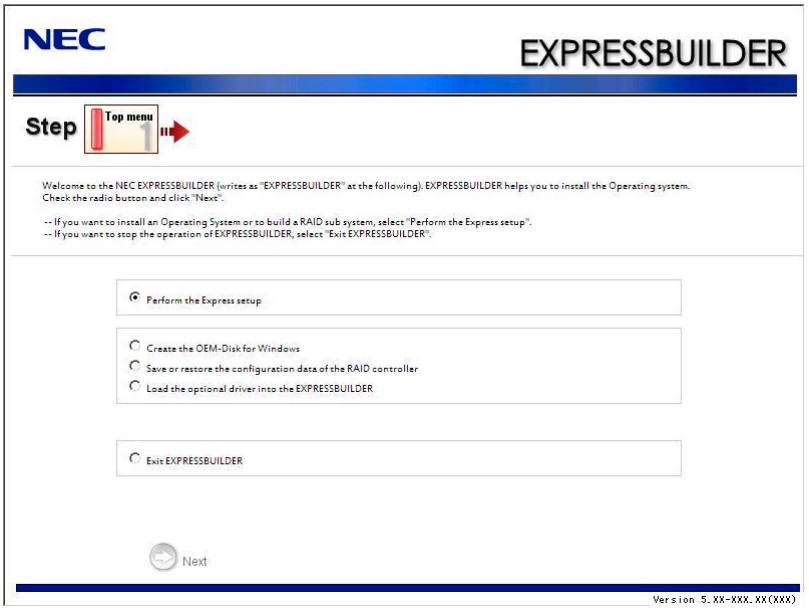
   Select "Os installation *** default ***" from the Boot selection menu.
   (If you do not hit any key, "Os installation" is selected automatically.)

   The Top menu will appear.

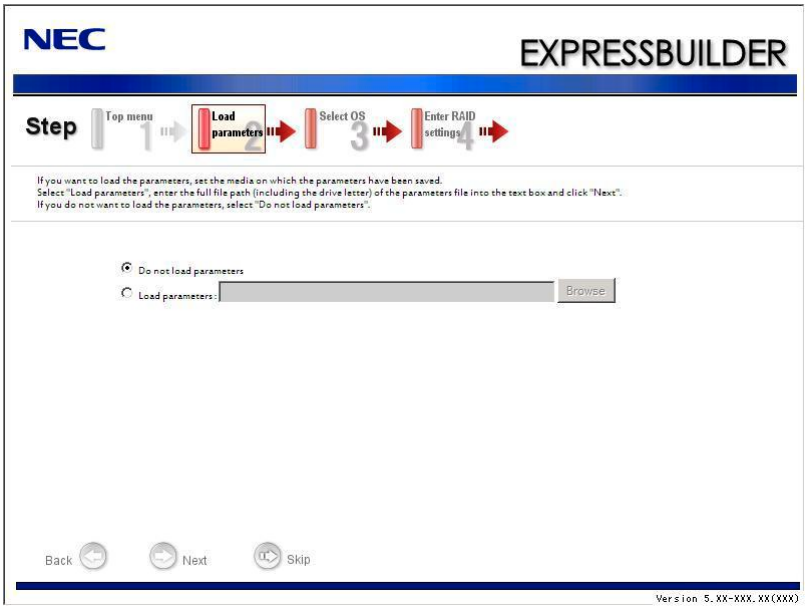


4. Select [English] from the Select Language, click [OK].

5. Select [Perform the Express setup] from the Top Menu, click [Next].


NEC
EXPRESSBUILDER
Step
Top menu
Welcome to the NEC EXPRESSBUILDER (writes as "EXPRESSBUILDER" at the following). EXPRESSBUILDER helps you to install the Operating system.
Check the radio button and click "Next".
-- If you want to install an Operating System or to build a RAID sub system, select "Perform the Express setup".
-- If you want to stop the operation of EXPRESSBUILDER, select "Exit EXPRESSBUILDER".
Perform the Express setup
Create the OEM-Disk for Windows
Save or restore the configuration data of the RAID controller
Load the optional driver into the EXPRESSBUILDER
Exit EXPRESSBUILDER
Next
Version 5.XX-XXX.XX(XXX)

6. [Load parameters] steps are displayed.


NEC
EXPRESSBUILDER
Step
Top menu
Load parameters
Select OS
Enter RAID settings
If you want to load the parameters, set the media on which the parameters have been saved.
Select "Load parameters", enter the full file path (including the drive letter) of the parameters file into the text box and click "Next".
If you do not want to load the parameters, select "Do not load parameters".
Do not load parameters
Load parameters:
Browse
Back
Next
Skip
Version 5.XX-XXX.XX(XXX)

[Do not load parameters]

(1) Select [Do not load parameters].

(2) Click [Next].

NOTE: If a floppy disk drive is not connected, select this item.

[Load parameters]

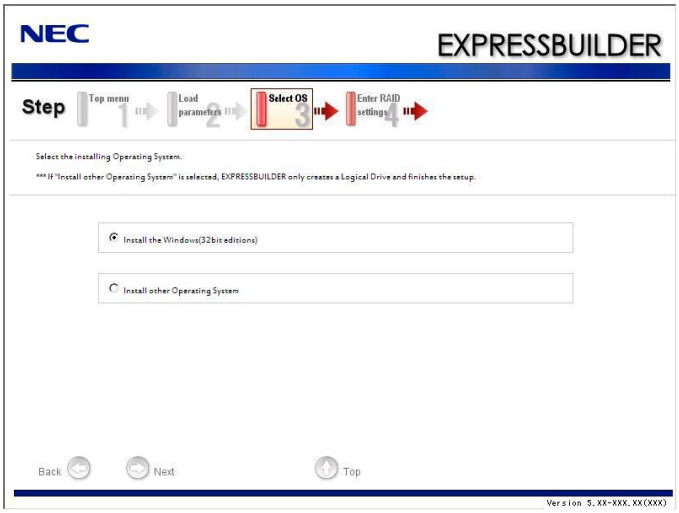
(1) Insert the floppy disk containing the parameters file.

(2) Select [Load parameters], enter the file path of the parameters file into the text box.

(3) Click [Next].

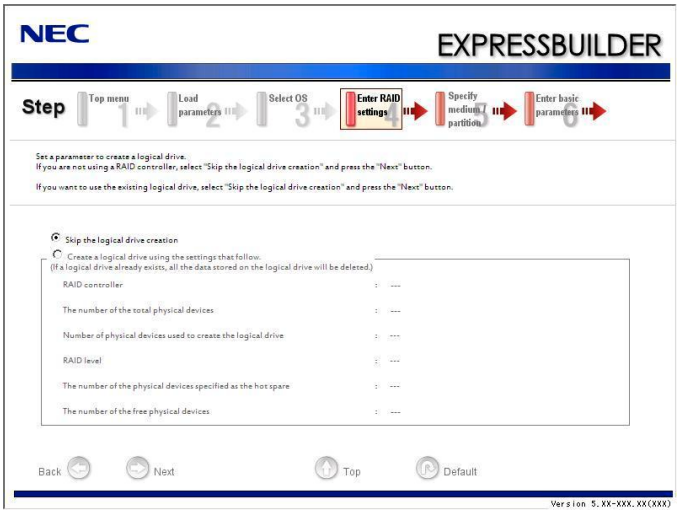
7. Select the installing Operating System.

Select [Install the Windows (32bit editions)] from the menu, click [Next].



8. Enter the setting of a logical drive.

[Enter RAID settings] steps are displayed. Confirm the parameters, modify if necessary, and then click [Next].

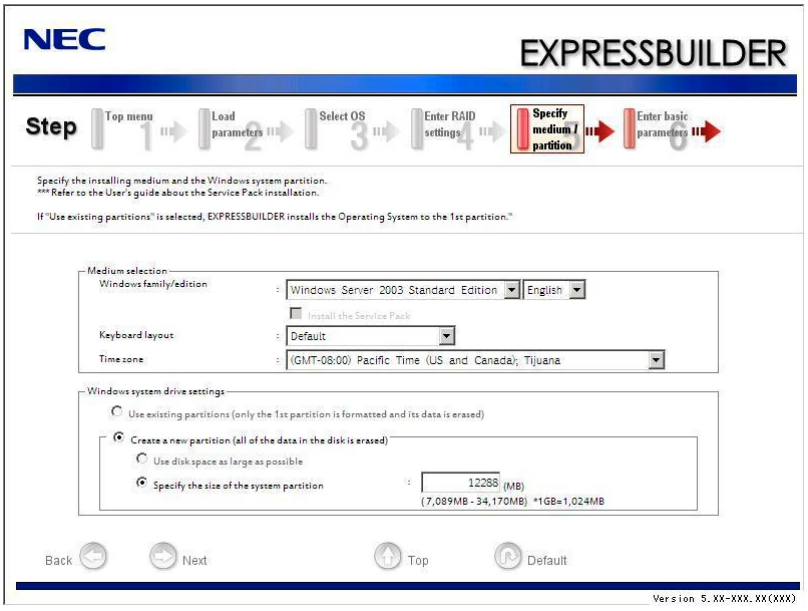

NEC
EXPRESSBUILDER
Step
Top menu
Load parameters
Select OS
Enter RAID settings
Specify medium / partition
Enter basic parameters
Set a parameter to create a logical drive.
If you are not using a RAID controller, select "Skip the logical drive creation" and press the "Next" button.
If you want to use the existing logical drive, select "Skip the logical drive creation" and press the "Next" button.
Skip the logical drive creation
Create a logical drive using the settings that follow.
(If a logical drive already exists, all the data stored on the logical drive will be deleted.)
RAID controller
The number of the total physical devices
Number of physical devices used to create the logical drive
RAID level
The number of the physical devices specified as the hot spare
The number of the free physical devices
Back
Next
Top
Default
Version 5.XX-XXX.XX(XXX)

NOTES:

- You can use only the physical devices that have same model number to configure logical drive.
- If the process is not finished normally, the driver may not be stored in the EXPRESSBUILDER. Refer to "Optional Board Supported by NEC EXPRESSBUILDER" described earlier in this chapter.
- When you use N8403-026 (RAID Controller), N8403-027 (SATA Interface card), if [Skip the logical drive creation] is not selected at [Enter RAID settings] screen, refer to "RAID Configuration (Chapter 4)" or "Creating new RAID using N8403-026 (RAID Controller), N8403-027 (SATA Interface card) (Page 5-54)" to create RAID beforehand.

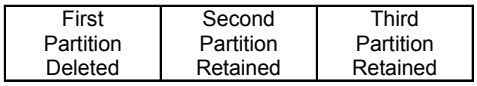
9. Specify the installing medium and the Windows system partition.

[Specify medium / Partition] steps are displayed. Confirm the parameters, modify if necessary, and then click [Next].


NEC
EXPRESSBUILDER
Step
Top menu
Load parameters
Select OS
Enter RAID settings
Specify medium / partition
Enter basic parameters
Specify the installing medium and the Windows system partition.
*** Refer to the User's guide about the Service Pack installation.
If "Use existing partitions" is selected, EXPRESSBUILDER installs the Operating System to the 1st partition.
Medium selection
Windows family/edition
Windows Server 2003 Standard Edition
English
Install the Service Pack
Keyboard layout
Default
Time zone
(GMT-08:00) Pacific Time (US and Canada); Tijuana
Windows system drive settings
Use existing partitions (only the 1st partition is formatted and its data is erased)
Create a new partition (all of the data in the disk is erased)
Use disk space as large as possible
Specify the size of the system partition
12288 (MB)
(7,089MB - 34,170MB) *1GB=1,024MB
Back
Next
Top
Default
Version 5.XX-XXX.XX(XXX)

IMPORTANT:

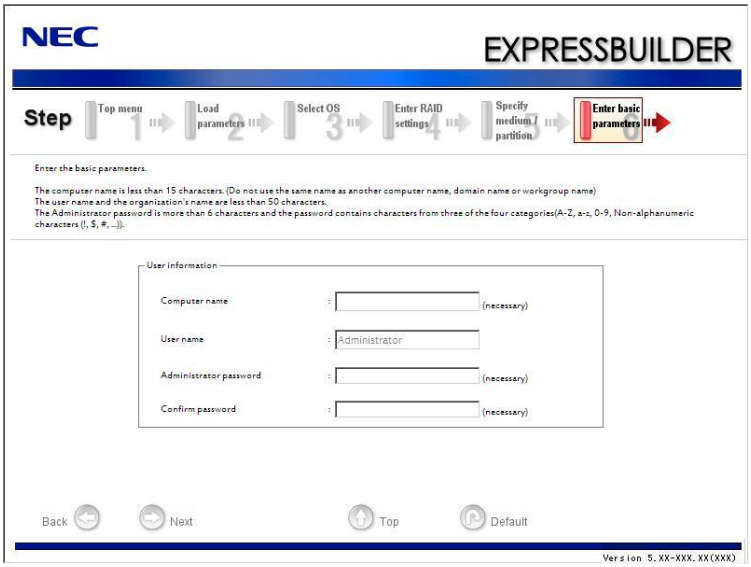
- About partition size
  - Specify the partition size larger than required minimum size for OS installation.
  - Do not specify larger partition size than the capacity of connected hard disk drive.
  - You can not specify a logical drive larger than 2,097,144MB at RAID system.
- If you select "Create a new partition" at "Windows system drive settings", the contents of the hard disk will be all deleted.
- If "Use existing partitions" is selected, EXPRESSBUILDER installs the Operating System to the 1st partition (1st partition is deleted). The data in the other partition is kept if the system has two or more partitions. (See the figure below.)



- You can not re-install the system with the existing partition that is upgraded to Dynamic Disk remained. Do not select "Use existing partitions" at "Windows system drive settings".

10. Enter the user information and client license mode.

[Enter basic parameters] steps are displayed. Confirm the parameters, modify if necessary, and then click [Next].

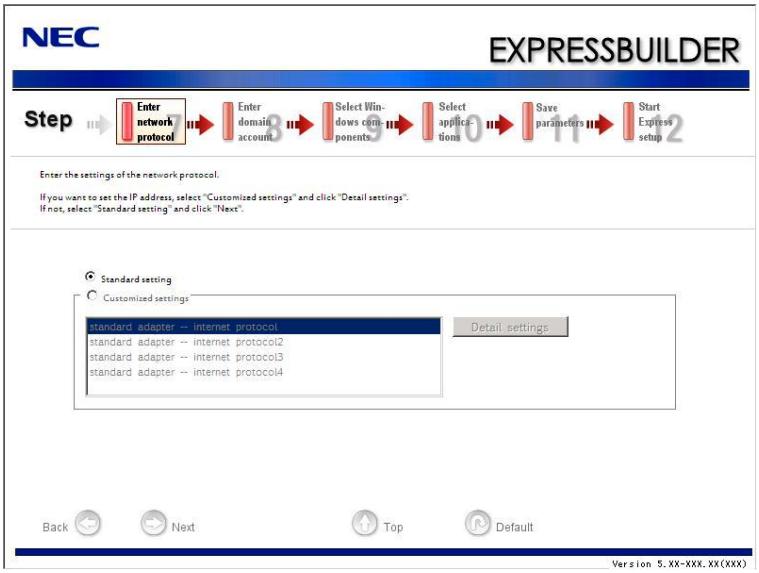


IMPORTANT: Computer name and Administrator password that satisfy the next condition, are required.

- More than 6 characters
- Contains characters from three of the following categories (numbers, uppercase letters, lowercase letters, and signs).

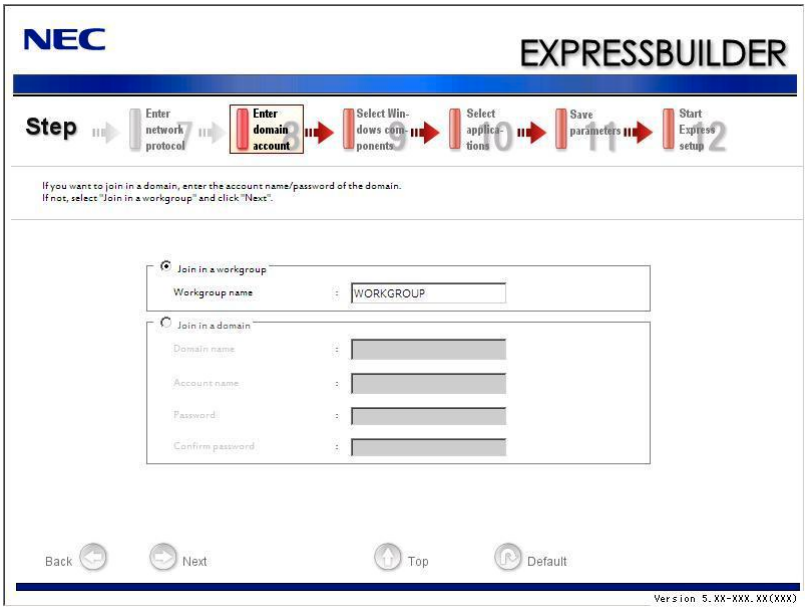
11. Enter the setting of the network protocol.

[Enter Network Protocol] steps are displayed. Confirm the parameters, modify if necessary, and then click [Next].



12. Enter the domain or workgroup name to be used.

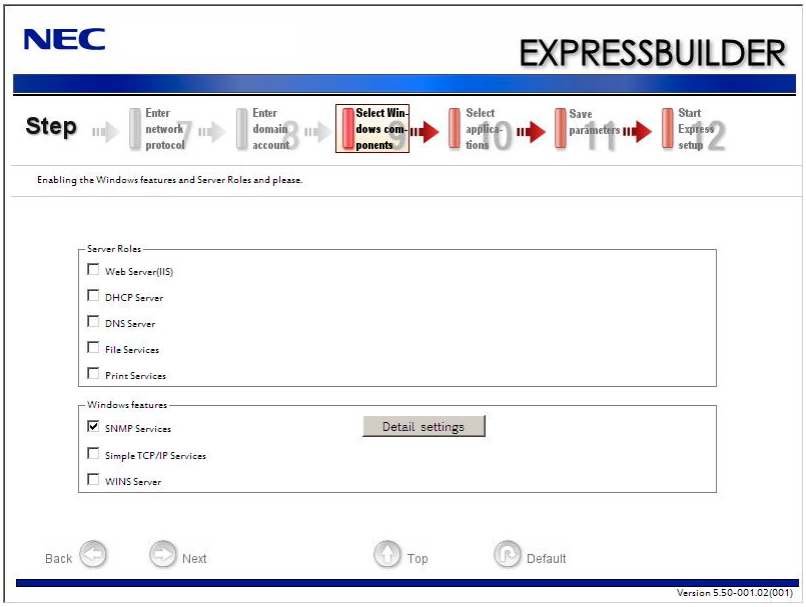
[Enter domain account] steps are displayed. Confirm the parameters, modify if necessary, and then click [Next].



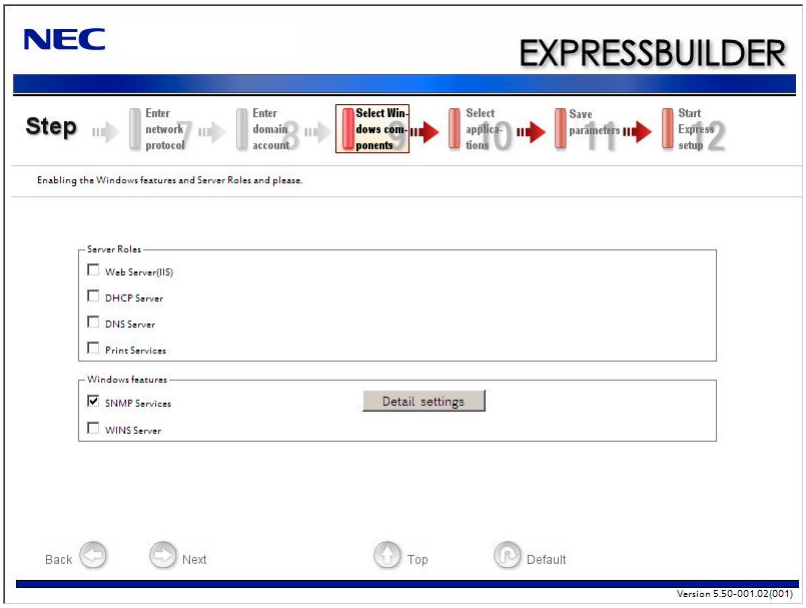
13. Select the installing components.

[Select Windows components] steps are displayed. Confirm the parameters, modify if necessary, and then click [Next].

<Full Installation>

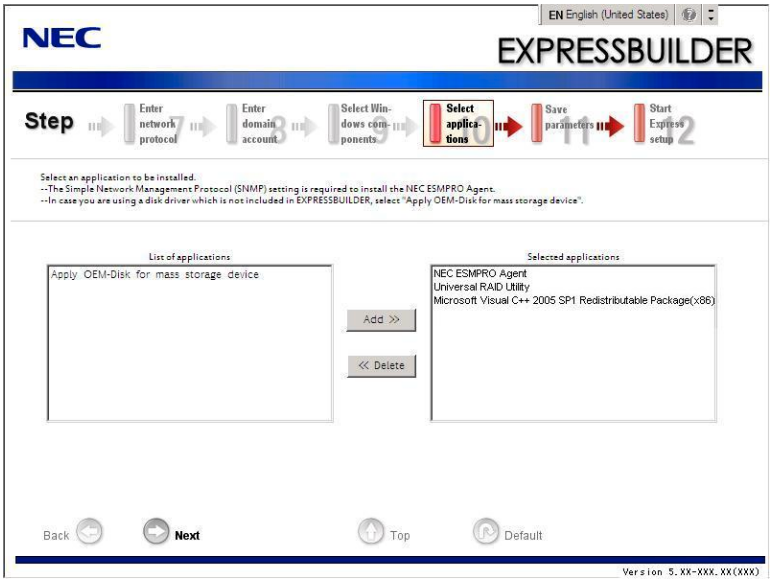


<ServerCore Installation>



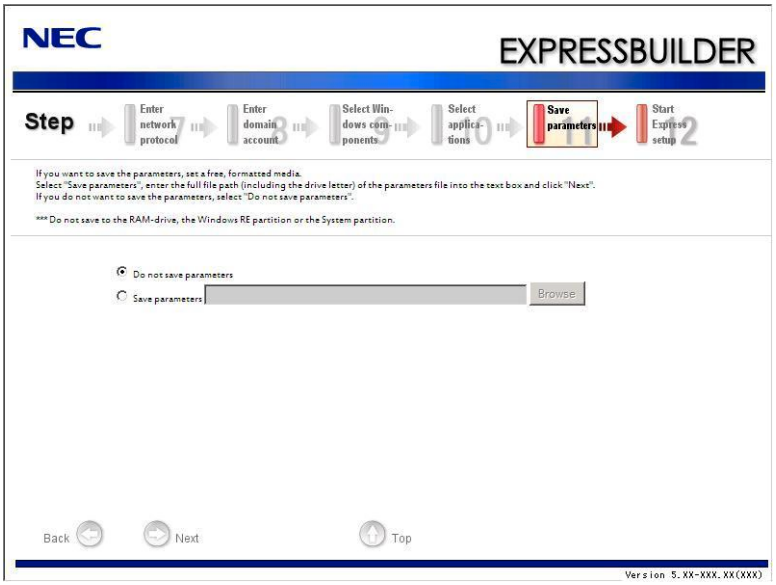
14. Select the installing applications.

[Select applications] steps are displayed. Confirm the parameters, modify if necessary, and then click [Next].



15. Save the parameters.

[Save parameters] steps are displayed.

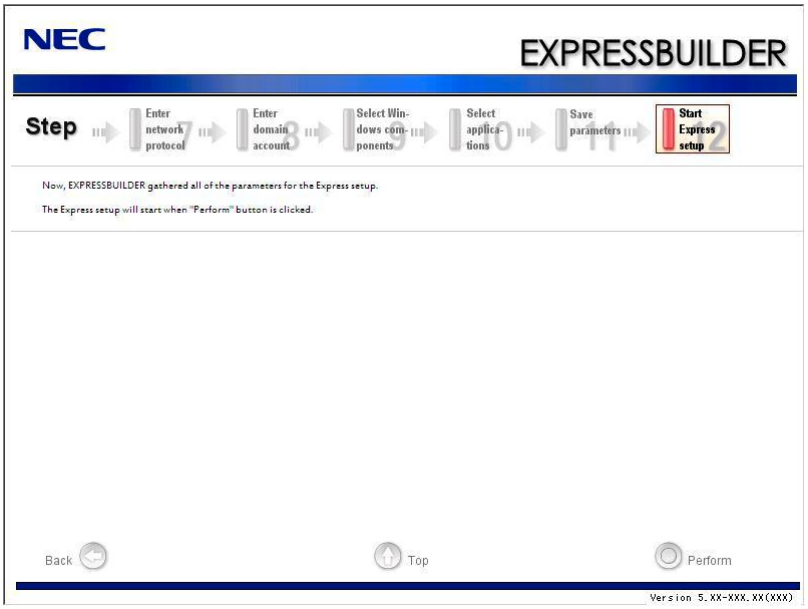

NEC
EXPRESSBUILDER
Step
Enter network protocol
Enter domain account
Select Windows components
Select applications
Save parameters
Start Express setup
If you want to save the parameters, set a free, formatted media.
Select "Save parameters", enter the full file path (including the drive letter) of the parameters file into the text box and click "Next".
If you do not want to save the parameters, select "Do not save parameters".
*** Do not save to the RAM-drive, the Windows RE partition or the System partition.
Do not save parameters
Save parameters
Browse
Back
Next
Top
Version 5.XX-XXX.XX(XXX)

If you want to save the parameters , set the free formatted floppy disk.

Select [Save parameters], enter the file path of the parameters files into the text box and click [Next].

If not, select [Do not save parameters].

16. The Express Setup will start when you click [Perform] in [Start Express setup] step.



17. Copy optional Mass Storage Driver module.

If you install optional Mass Storage Driver, the message will be shown.

Insert CD-ROM or floppy disk attached to the Mass Storage Driver and proceed operation according to the message.

18. Remove NEC EXPRESSBUILDER DVD from the optical disk drive according to the message.

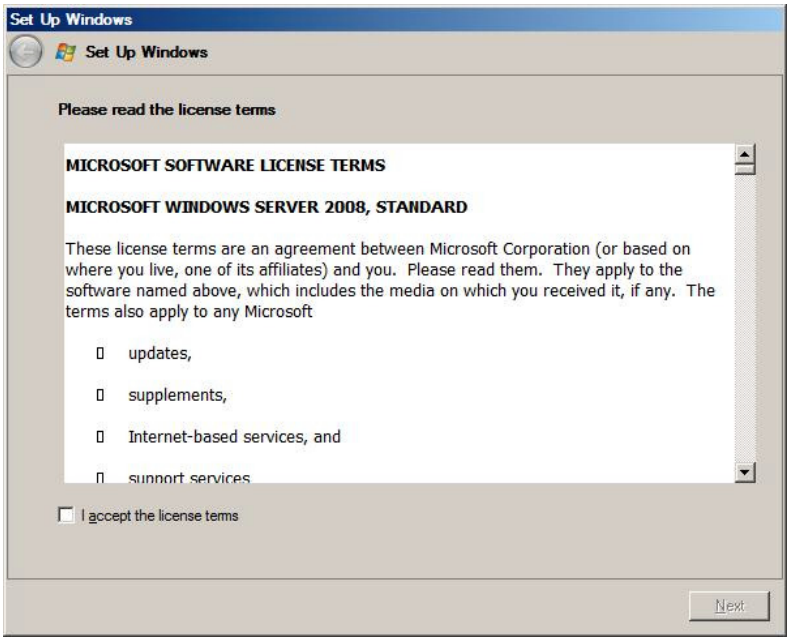
If you proceed the setup by using setup parameter file, remove the floppy disk from the floppy disk drive.

19. Insert Windows Server 2008 DVD-ROM into the optical disk drive.

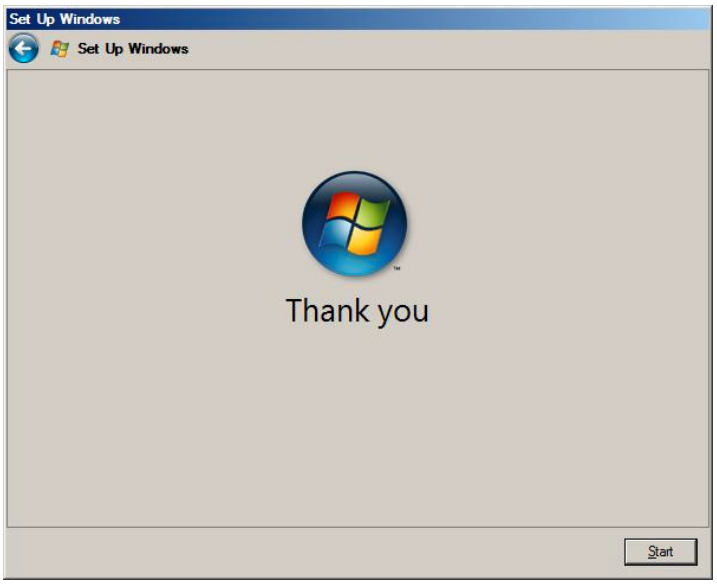
NOTE: Windows Server 2008 and selected applications will be installed automatically and reboots several times.

20. [Agree Software License Agreement] screen appears.

Read the license terms carefully. If you agree, select I accept the license terms, and then click [Next].


Set Up Windows
Set Up Windows
Please read the license terms
MICROSOFT SOFTWARE LICENSE TERMS
MICROSOFT WINDOWS SERVER 2008, STANDARD
These license terms are an agreement between Microsoft Corporation (or based on where you live, one of its affiliates) and you. Please read them. They apply to the software named above, which includes the media on which you received it, if any. The terms also apply to any Microsoft
updates,
supplements,
Internet-based services, and
support services
I accept the license terms
Next

21. When the following message appears, click [Start].



22. When the following message appears, press **Ctrl** + **Alt** + **Del**.

23. Log on to the system.

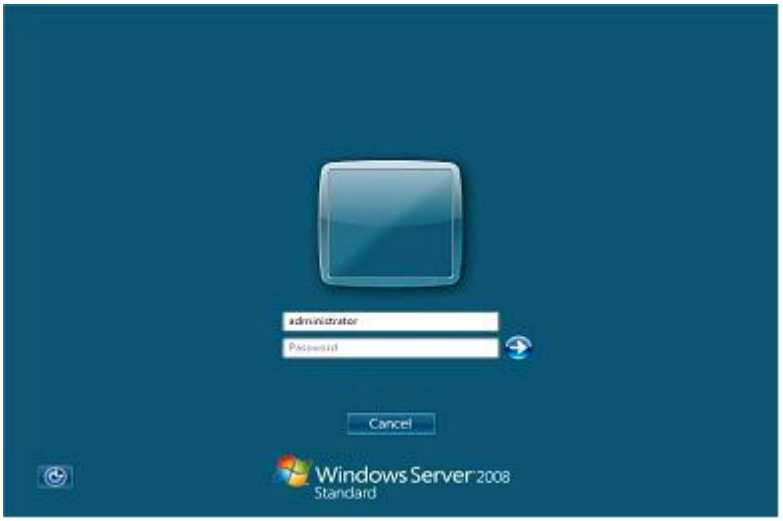
<Full Installation>

When the following screen appears, enter your password into "Password", and click "→".

<Server Core Installation>

When the following screen appears, click "Other User".

In the following screen, enter "Administrator" into [UserName], your password into "Password", and click "→".



Hereinafter, proceed operations according to the message.

Now the Setup using Express Setup has completed.

After Express Setup has completed, be sure to execute the tasks described in "Setup of Device Driver (Normally Install in Server)" of Appendix B.

Installing and Setting Device Drivers

Be sure to execute the tasks described in "Setup of Device Driver (Normally Install in Server)" of Appendix B.

Microsoft Windows Server 2003

This section explains how to install Microsoft® Windows Server® 2003 by using the Express Setup.

NOTES:

- Express Setup does not support the installation of Windows Server x64 Editions. If you want to install it, see Appendix B.
- If you install Windows Server 2003 without using Express Setup, see Appendix B.

Notes on Windows Installation

This section explains the notes on the Windows installation.

Confirm these notes before starting the Express Setup.

About the Windows family

This computer supports the following Windows editions:

- Microsoft® Windows Server® 2003 R2 Standard Edition / Microsoft® Windows Server® 2003 R2 Enterprise Edition (hereinafter, referred to as "Windows Server 2003")

NOTE: Express Setup does not support the installation of Windows Server 2003 x64 Editions. If you want to install it, see Appendix B.

On installing other OS, contact sales dealer or the maintenance service representative.

BIOS Settings

Confirm the BIOS settings described in Chapter 4 before installing Windows Server 2003.

Service Pack Which EXPRESSBUILDER Supports

The NEC EXPRESSBUILDER DVD attached to the server supports following combination of the OS installation media and Service Pack.

- Windows Server 2003 R2 x64 Edition
  - OS installation media (with Service Pack 2)
  - OS installation media (No Service Pack) + Service Pack 2
  - OS installation media (No Service Pack)
- Windows Server 2003 R2
  - OS installation media (with Service Pack 2)
  - OS installation media (No Service Pack) + Service Pack 2
  - OS installation media (No Service Pack)

Supported Mass Storage Controllers

The NEC EXPRESSBUILDER DVD attached to your system supports the following mass storage controllers for installation.

NOTE: If you want to install the other boards by using a driver floppy disk ("OEM-FD for Mass storage device"), except ones listed below, see "Installing with the OEM-FD for Mass storage device" and "Installing Optional Mass Storage Driver" of "Parameter File Creator" in Chapter 6.

- Controllers supporting installation of OS with Express Setup
  - N8403-026 (RAID Controller)
  - N8403-027 (SATA Interface card)
  - N8403-018 FibreChannel Controller*
- Other controllers
  - N8403-018 FibreChannel Controller*

  * Option

NOTES:

- The driver of option card mentioned above is stored in the EXPRESSBUILDER DVD.
- If you use the board not mentioned above, the ExpressSetup will fail. Refer to the instructions attached to the board.

About the Hardware Components

When you install the Windows Server 2003, Express Setup requires several preparations if this computer uses the following hardware components.

Installing on the Mirrored Volume

If you want to install the Windows Server 2003 on the volume that is mirrored using "Disk Management", invalidate the mirroring and set back to the basic disk before the installation, and validate the mirroring again after the installation.

You can create, invalidate or delete the mirror volume by using "Disk Management" in "Computer Management".

Mounting MO Device

Do not mount an MO device on this computer during the Windows installation.

About Removable Media

Do not set removable media, such as DAT, into the device mounted on this computer during the Windows installation.

Connecting Hard Disk Drive

Do not connect the other hard disk drives except the drive that you want to create the Windows system drive.

If you create multiple logical drives in your system, see "Re-installing the Operating system when multiple logical drive exist" (Appendix B).

Re-installing to the hard disk drive which has been upgraded to Dynamic Disk

You cannot re-install Windows Server 2003 with the current partition of the hard disk drive upgraded to Dynamic Disk kept remained.

If you want to keep the current partition remained, see Appendix B to re-install the system.

SAN Boot

If you use SAN boot, confirm BIOS Setup before setup Windows.

- If you use SAN boot with N8403-027, set following BIOS setting.

  [Advanced] → [Peripheral Configuration] → [SATA AHCI] and [SATA RAID] change to [Disabled].

- If you use SAN boot with N8403-026, set following BIOS setting.

  [Advanced] → [PCI Configuration] → Option ROM Scan [Enabled] → [Disabled]

> **IMPORTANT:** After executing [Load Setup Defaults], set this BIOS setting. If you do not set up BIOS setting, you could not install Windows.

About the System Partition Size

The system partition size can be calculated from the following formula.

Size necessary to install the system + Paging File Size + Dump File Size + Application Size
Size necessary to install the system = 3500MB (Windows Server 2003 R2)
= 3500MB (Windows Server 2003 R2 with Service Pack2)
= 5300MB (Windows Server 2003 R2 + Service Pack2 CD-ROM)
Paging File Size (Recommended) = Mounted Memory Size * 1.5
Dump File Size = Mounted Memory Size + 12MB
Application Size = Required Size

IMPORTANT:

- The above-mentioned paging file size is recommended for collecting debug information (memory dump). The paging file with initial size large enough to store the dump file in the boot drive is required.
  Correct debug information might not be able to be collected due to virtual memory shortage when the paging file is insufficient, so set an enough size of the paging file with the entire system.
- The maximum paging file size which can be set on one partition is 4095MB. If the above paging file size exceeds 4095MB, specify 4095MB for the paging file size.
- The maximum dump file size for the system with more than 2GB memory mounted is '2048MB + 12MB'.
- If you install any application program or the like, add necessary space to the partition to install these programs.

For example, if the mounted memory size is 512MB, the partition size will be calculated by the above formula as follows:

3500MB + (512MB * 1.5) + (512MB + 12MB) + Application Size
= 4792MB + Application Size

Dividing into the partition of the recommended size into multiple disks as written below will solve problem that it cannot be reserved in one disk.

1. Set the "Size required for installation + Paging file size".
2. See Chapter 5 and set that debugging information (equivalent to the dump file size) is to be written to a separate disk.

   (If the disk does not have enough free space to enable the dump file size to be written, then after installing the system using the "Size required for installation + Paging file size", install an additional new disk.)

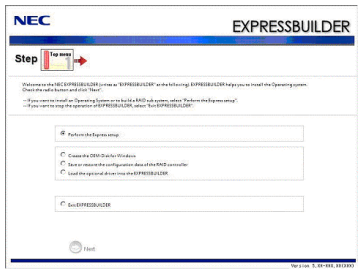
Installing the Service Pack

When installing Windows Server 2003 R2, it is not necessary to install the Service Pack 1.

When installing Windows Server 2003 R2, do not apply Service Pack by Express Setup.

Flow of Setup

This section visually describes the flow of the setup operated by Express Setup.



Loading parameters (Step 2)

Skip

Next

Select the operating system (Step 3)

Next

RAID configuration (Step 4)

Next

Windows Confirm Setting / Input
(Steps 5 to 10)

Next

Save parameters (Step 11)

Next

Start Express Setup (Step 12)

Perform

RAID Configuration

Create the OS partition / format

Copying Windows driver
↓
Copying Selected Application

Remove the Floppy Disk and CD/DVD-ROM from the Drive

Insert Windows CD-ROM

Agree Software License Agreement

Install OS Automatically
↓
Log on Automatically

The installation is completed.

: Process that needs to input or select

: Process that proceeds automatically

Installing the Windows Server 2003

Express Setup proceeds the setup by selecting or inputting several parameters on the wizard. You can also save the parameters to a floppy disk as a parameters file.

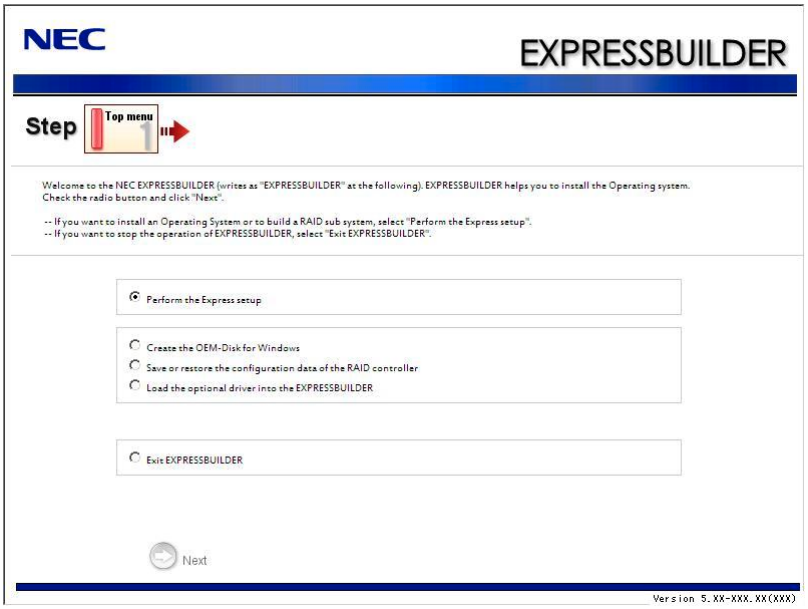
1. Turn the power of peripheral device on, and then turn on the server.
2. Insert the NEC EXPRESSBUILDER DVD into the optical disk drive of the server.
3. Press the RESET switch or press **Ctrl**, **Alt**, and **Delete** to reboot from the NEC EXPRESSBUILDER. (You may also turn off and then on again to reboot the server.)

   The system will boot from the DVD and NEC EXPRESSBUILDER starts.

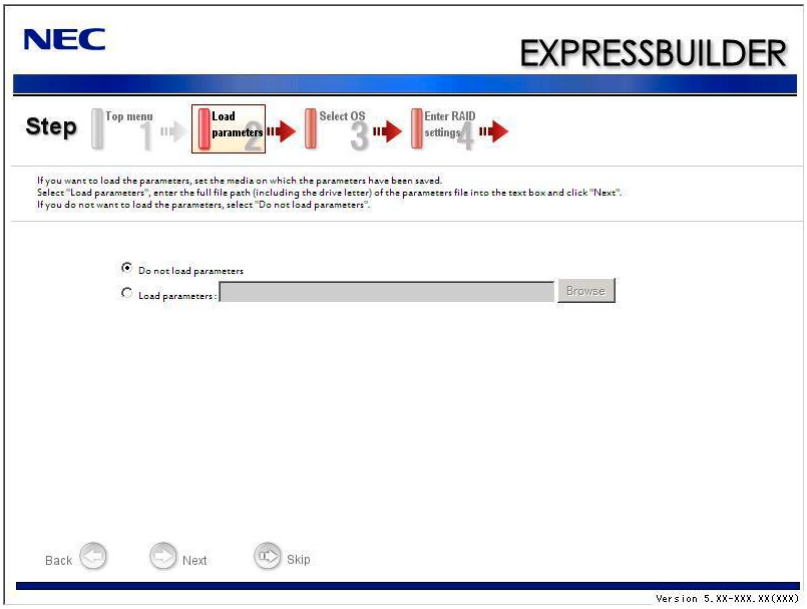
   Select "Os installation *** default ***" from the Boot selection menu. (If you do not hit any key, "Os installation" is selected automatically.)

   The Top menu will appear.
4. Select [English] from the Select Language, and click [OK].

5. Select [Perform the Express setup] from the Top Menu, click [Next].


NEC
EXPRESSBUILDER
Step
Top menu
Welcome to the NEC EXPRESSBUILDER (writes as "EXPRESSBUILDER" at the following). EXPRESSBUILDER helps you to install the Operating system.
Check the radio button and click "Next".
-- If you want to install an Operating System or to build a RAID sub system, select "Perform the Express setup".
-- If you want to stop the operation of EXPRESSBUILDER, select "Exit EXPRESSBUILDER".
Perform the Express setup
Create the OEM-Disk for Windows
Save or restore the configuration data of the RAID controller
Load the optional driver into the EXPRESSBUILDER
Exit EXPRESSBUILDER
Next
Version 5.XX-XXX.XX(XXX)

6. [Load parameters] steps are displayed.


NEC
EXPRESSBUILDER
Step
Top menu
1
Load parameters
2
Select OS
3
Enter RAID settings
4
If you want to load the parameters, set the media on which the parameters have been saved.
Select "Load parameters", enter the full file path (including the drive letter) of the parameters file into the text box and click "Next".
If you do not want to load the parameters, select "Do not load parameters".
Do not load parameters
Load parameters :
Browse
Back
Next
Skip
Version 5.XX-XXX.XX(XXX)

[Do not load parameters]

(1) Select [Do not load parameters].

(2) Click [Next].

NOTE: If a floppy disk drive is not connected, select this item.

[Load parameters]

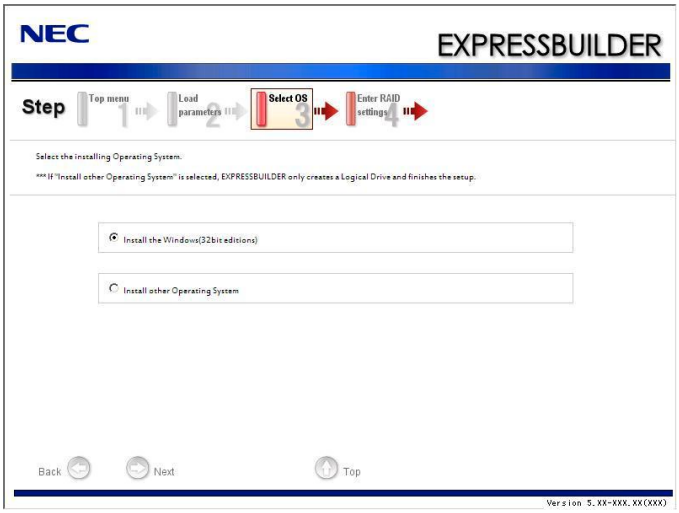
(1) Insert the floppy disk containing the parameters file.

(2) Select [Load parameters], enter the file path of the parameters file into the text box.

(3) Click [Next].

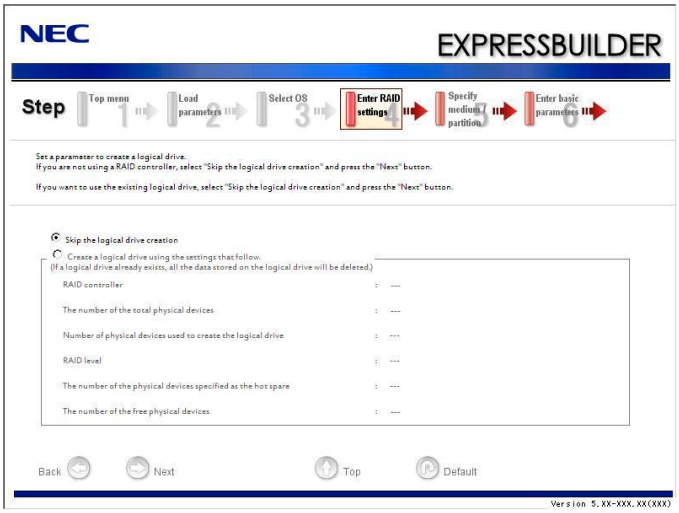
7. Select the installing Operating System.

Select [Install the Windows (32bit editions)] from the menu, click [Next].



8. Enter the setting of a logical drive.

[Enter RAID settings] steps are displayed. Confirm the parameters, modify if necessary, and then click [Next].

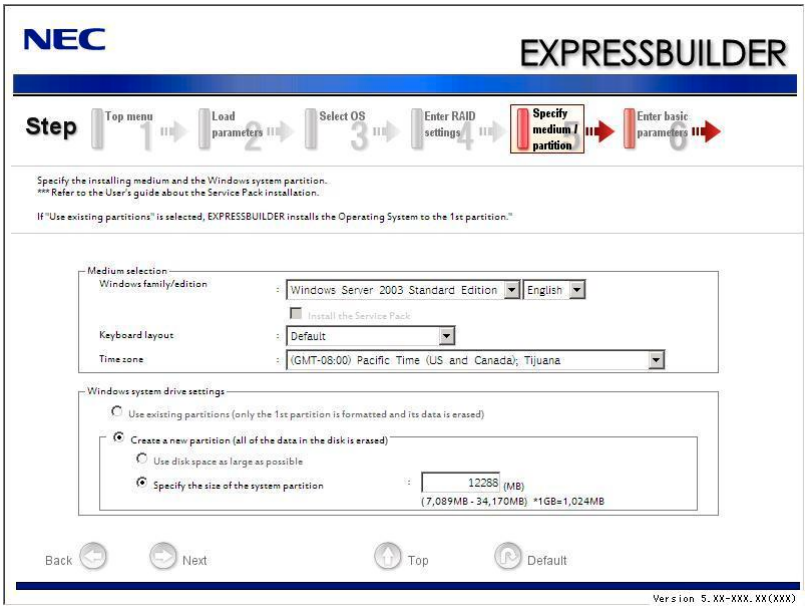

NEC
EXPRESSBUILDER
Step
Top menu
Load parameters
Select OS
Enter RAID settings
Specify medium / partition
Enter basic parameters
Set a parameter to create a logical drive.
If you are not using a RAID controller, select "Skip the logical drive creation" and press the "Next" button.
If you want to use the existing logical drive, select "Skip the logical drive creation" and press the "Next" button.
Skip the logical drive creation
Create a logical drive using the settings that follow.
(If a logical drive already exists, all the data stored on the logical drive will be deleted.)
RAID controller
The number of the total physical devices
Number of physical devices used to create the logical drive
RAID level
The number of the physical devices specified as the hot spare
The number of the free physical devices
Back
Next
Top
Default
Version 5.XX-XXX.XX(XXX)

NOTES:

- You can use only the physical devices that have same model number to configure logical drive.
- If the process is not finished normally, the driver may not be stored in the EXPRESSBUILDER. Refer to "Optional Board Supported by NEC EXPRESSBUILDER" described earlier in this chapter.

9. Specify the installing medium and the Windows system partition.

[Specify medium / Partition] steps are displayed. Confirm the parameters, modify if necessary, and then click [Next].


NEC
EXPRESSBUILDER
Step
Top menu
Load parameters
Select OS
Enter RAID settings
Specify medium / partition
Enter basic parameters
Specify the installing medium and the Windows system partition.
*** Refer to the User's guide about the Service Pack installation.
If "Use existing partitions" is selected, EXPRESSBUILDER installs the Operating System to the 1st partition."
Medium selection
Windows family/edition
Windows Server 2003 Standard Edition
English
Install the Service Pack
Keyboard layout
Default
Time zone
(GMT-08:00) Pacific Time (US and Canada); Tijuana
Windows system drive settings
Use existing partitions (only the 1st partition is formatted and its data is erased)
Create a new partition (all of the data in the disk is erased)
Use disk space as large as possible
Specify the size of the system partition
12288 (MB)
(7,089MB - 34,170MB) *1GB=1,024MB
Back
Next
Top
Default
Version 5.XX-XXX.XX(XXX)

IMPORTANT:

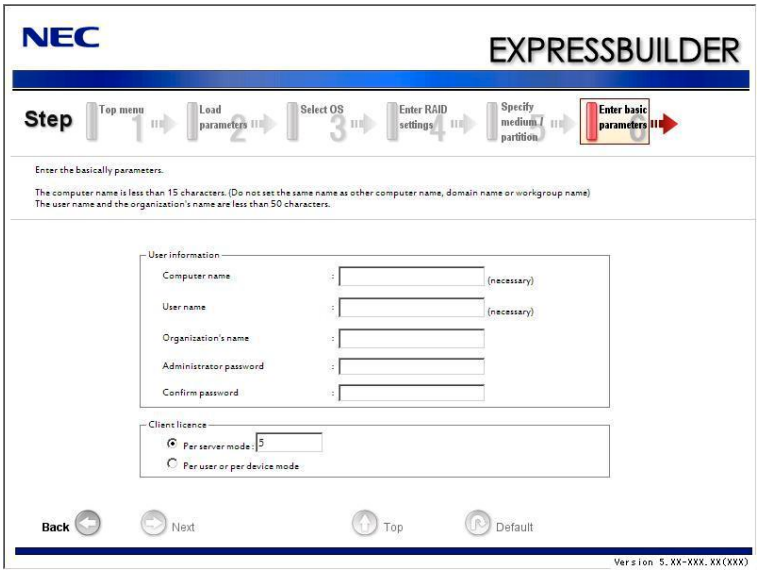
- About partition size
  - Specify the partition size larger than required minimum size for OS installation.
  - Do not specify larger partition size than the capacity of connected hard disk drive.
  - You can not specify a logical drive larger than 2,097,144MB at RAID system.
- If you select "Create a new partition" at "Windows system drive settings", the contents of the hard disk will be all deleted.
- If "Use existing partitions" is selected, EXPRESSBUILDER installs the Operating System to the 1st partition (1st partition is deleted). The data in the other partition is kept if the system has two or more partitions. (See the figure below.)

First Partition Deleted	Second Partition Retained	Third Partition Retained

- You can not re-install the system with the existing partition that is upgraded to Dynamic Disk remained. Do not select "Use existing partitions" at "Windows system drive settings".

10. Enter the user information and client license mode.

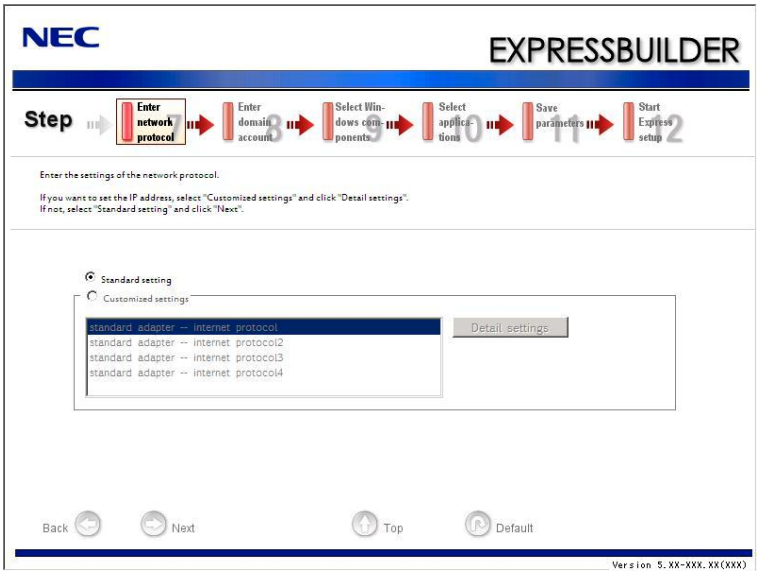
[Enter basic parameters] steps are displayed. Confirm the parameters, modify if necessary, and then click [Next].



NOTE: Even if you do not input value into "Administrator password", "Confirm password", "●●●●●●" is displayed.

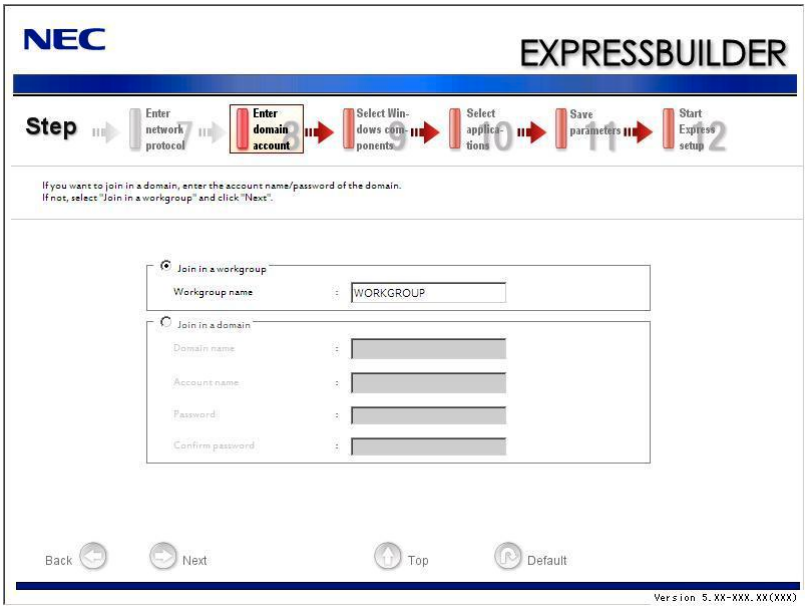
11. Enter the setting of the network protocol.

[Enter Network Protocol] steps are displayed. Confirm the parameters, modify if necessary, and then click [Next].



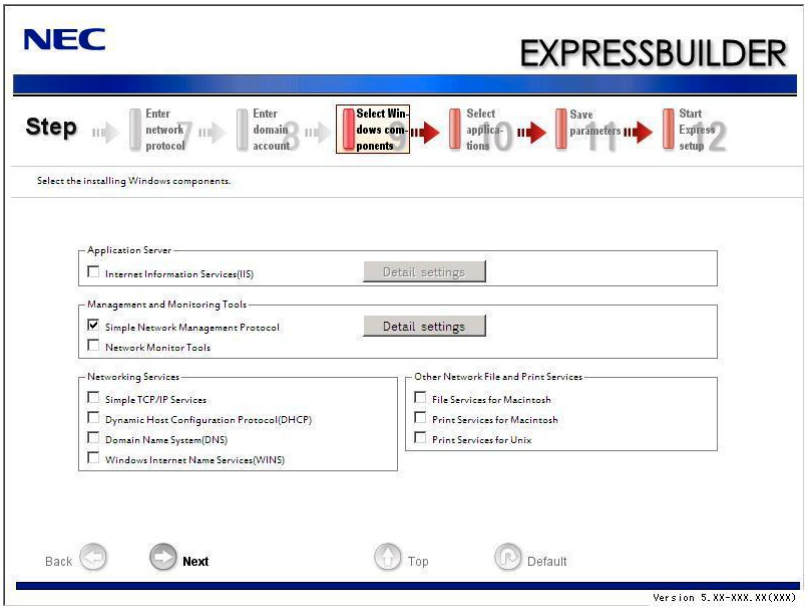
12. Enter the domain or workgroup name to be used.

[Enter domain account] steps are displayed. Confirm the parameters, modify if necessary, and then click [Next].



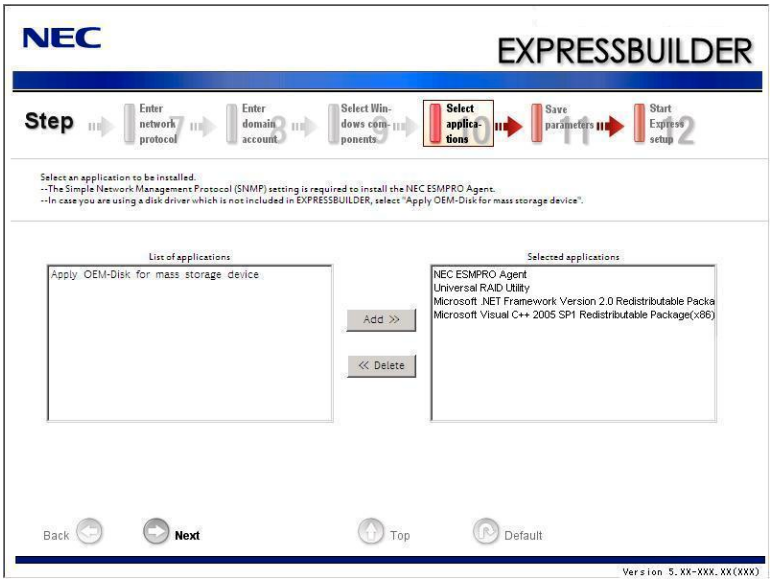
13. Select the installing components.

[Select Windows components] steps are displayed. Confirm the parameters, modify if necessary, and then click [Next].



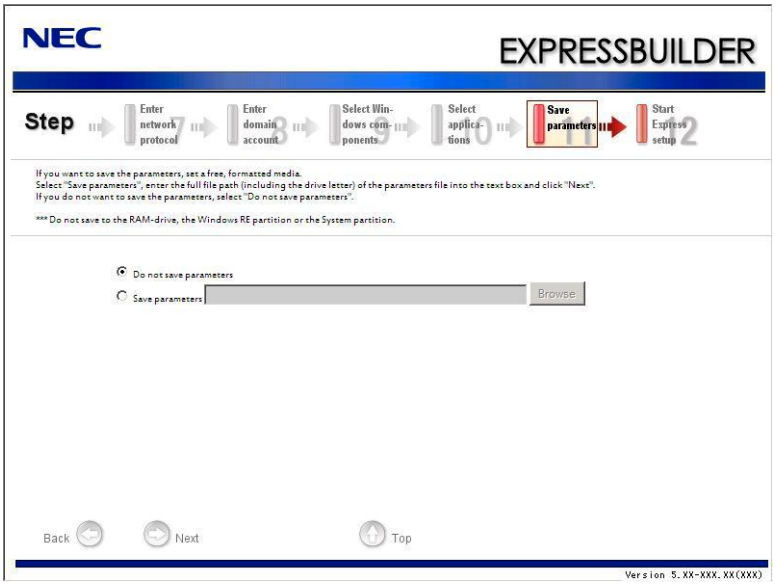
14. Select the installing applications.

[Select applications] steps are displayed. Confirm the parameters, modify if necessary, and then click [Next].



15. Save the parameters.

[Save parameters] steps are displayed.

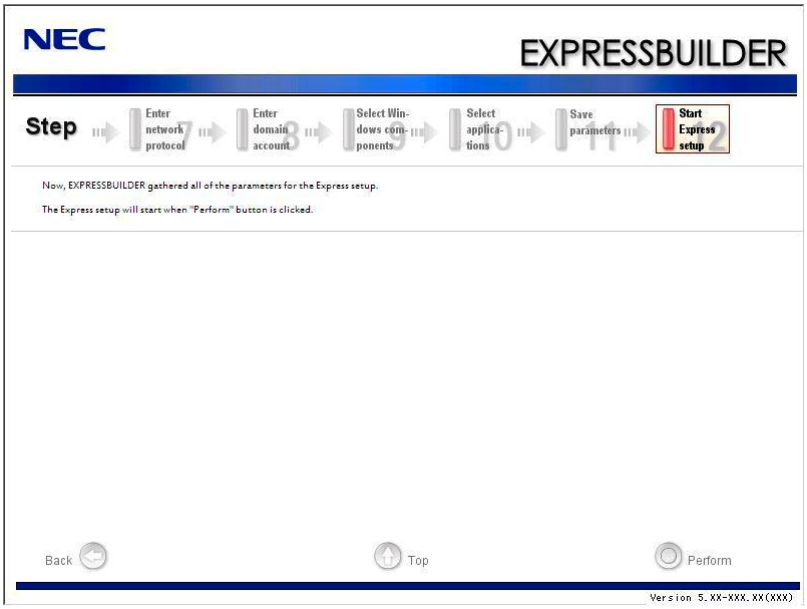

NEC
EXPRESSBUILDER
Step
Enter network protocol
Enter domain account
Select Windows components
Select applications
Save parameters
Start Express setup
If you want to save the parameters, set a free, formatted media.
Select "Save parameters", enter the full file path (including the drive letter) of the parameters file into the text box and click "Next".
If you do not want to save the parameters, select "Do not save parameters".
*** Do not save to the RAM-drive, the Windows RE partition or the System partition.
Do not save parameters
Save parameters
Browse
Back
Next
Top
Version 5.XX-XXX.XX(XXX)

If you want to save the parameters , set the free formatted floppy disk.

Select [Save parameters], enter the file path of the parameters files into the text box and click [Next].

If not, select [Do not save parameters].

16. The Express Setup will start when you click [Perform] in [Start Express setup] step.



17. Copy optional Mass Storage Driver module.

If you install optional Mass Storage Driver, the message will be shown.

Insert CD-ROM or floppy disk attached to the Mass Storage Driver and proceed operation according to the message.

18. Remove NEC EXPRESSBUILDER DVD from the optical disk drive according to the message.

If you proceed the setup by using setup parameter file, remove the floppy disk from the floppy disk drive.

Insert Windows Server 2003 CD-ROM into the optical disk drive.

[Agree Software License Agreement] screen appears.

19. Read the contents carefully and click [Yes] if you do agree. If you do not agree, click [No].

IMPORTANT:

- If you do not agree to this agreement, the setup terminates and Windows Server 2003 will not be installed.
- If "NetWare Gateway (and Client) Service" is specified to install, the window to specify the details of "NetWare Gateway (and Client) Service" pops up on the first logon. Specify the appropriate value.

Windows Server 2003 and selected applications will be installed automatically and rebooted several times.

After rebooting, it logs on to the system automatically.

20. If you install Microsoft Windows Server 2003 R2, insert Microsoft Windows Server 2003 R2 Standard Edition DISC 2 or Microsoft Windows Server 2003 R2 Enterprise Edition DISC 2 into the optical disk drive after the OS installation.

Hereinafter, proceed operations according to the message.

When the installation has finished, remove Microsoft Windows Server 2003 R2 Standard Edition DISC 2 or Microsoft Windows Server 2003 R2 Enterprise Edition DISC 2 from the optical disk drive, and restart the system.

Now the Setup using Express Setup has completed.

After Express Setup has completed, be sure to execute the tasks described in "Setup of Device Driver (Normally Install in Server)" of Appendix B.

Installing and Setting Device Drivers

Be sure to execute the tasks described in "Setup of Device Driver (Normally Install in Server)" of Appendix B.

Available Switch Options for Windows Server 2003 Boot.ini file

Many different switches will be available if you edit Boot.ini file.

For the available switch options, refer to the following information:

- Microsoft Knowledge Base - Article ID: 833721

  "Available switch options for the Windows XP and the Windows Server 2003 Boot.ini files"

If your system has a memory capacity in excess of 4GB in its installing, adding /PAE switch in Boot.ini file will enable the system to be installed with over 4GB of memory.

However, the Microsoft operating system products which support /PAE switch option are limited.

Refer to the following article in Microsoft Knowledge Base to check the supported products.

- Microsoft Knowledge Base - Article ID: 291988

  "A description of the 4GB RAM tuning feature and the Physical Address Extension switch"

Below is the example on how to add /PAE switch to Boot.ini file.

1. Click [Start], point to [Settings], and then click [Control Panel].
2. In [Control Panel], double-click [System].
3. Click the [Advanced] tab, and then click [Settings] under [Setup and Recovery].
4. Under [System Setup], click [Edit] to open [Boot.ini].
5. Add "/PAE" to [Operating Systems] section in [Boot.ini] file, and then save it.

   <Example of Boot.ini file>

   ```
   [boot loader]
   timeout=30
   default=multi(0)disk(0)rdisk(0)partition(2)\WINDOWS
   [operating systems]
   multi(0)disk(0)rdisk(0)partition(2)\WINDOWS="Windows Server 2003" /fastdetect
   multi(0)disk(0)rdisk(0)partition(2)\WINDOWS="Windows Server 2003, PAE" /fastdetect
   /PAE
   C:\CMDCONS\BOOTSECT.DAT="Microsoft Windows Recovery Console" /cmdcons
   ```

   This is the end of editing Boot.ini file.

NOTE: If you choose one of the items in the "Default operating system" drop-down list box in [Setup and Recovery] group box, you can make your system start automatically from the switch you specified.

SETTING FOR SOLVING PROBLEMS

Setup the following issue in advance so that your computer can recover from any trouble precisely and as soon as possible when it should occur.

Memory Dump (Debug Information) - Windows Server 2008 -

This section describes the procedures for collecting memory dump (debug information) in the server.

IMPORTANT: Cautions for the Memory Dump

- The staff of maintenance service representative is in charge of collecting memory dump. Customers need only to specify the memory dump.
- If any trouble occur after specifying the process below, the message to inform that the system is in short of virtual memory may appear, but continue to start the system. If you restart the system in such case, memory dump may not be stored correctly.

Follow the procedure below to specify.

1. Select [Control Panel] and click [System].

   The [System] dialog box appears.

2. Click [Advanced system settings].

   The [System Properties] dialog box appears.

3. Select [Advanced] tab.

   Click [Settings] on the [Startup and Recovery] group box.

4. Modify [Dump file:] in the [Write debugging information] group box.

   e.g. Write the debug information in D drive with the file name "MEMORY.DMP".

   D:\MEMORY.DMP

IMPORTANT:

Windows Server 2008 64-bit (x64) Edition

- To specify "Complete Memory Dump" to write the debug information is recommended. If the mounted memory size is larger than 2GB, "Complete Memory Dump" cannot be specified so that specify "Kernel Memory Dump" instead.
- Specify the drive where there is a free area more than the size of "the memory capacity mounted on Express server + 300MB".
- In case the mounted memory size exceeds 2GB due to the added memory, change the write debugging information to [Kernel Memory Dump] before adding memory. The size of debugging information (memory dump) to be taken also changes due to adding memory. Verify the size of the empty space in the debugging information (memory dump) write destination drive.

Windows Server 2008 32-bit (x86) Edition

- To specify "Complete Memory Dump" to write the debug information is recommended. If the mounted memory size is larger than 2GB, "Complete Memory Dump" cannot be specified so that specify "Kernel Memory Dump" instead.
- Specify the drive where there is a free area more than the size of "the memory capacity mounted on Express server + 300MB" (In case the memory capacity is more than 2GB, a free area of "2048+300MB" or more).
- In case the mounted memory size exceeds 2GB due to the added memory, change the write debugging information to [Kernel Memory Dump] before adding memory. The size of debugging information (memory dump) to be taken also changes due to adding memory. Verify the size of the empty space in the debugging information (memory dump) write destination drive.

5. Click [Settings] on the [Performance] group box.

   The [Performance Options] window appears.

6. Click [Advanced] tab on the [Performance Options] window.

7. Click [Change] on the [Virtual memory] group box.

8. Uncheck the [Automatically manage paging file size for all drives] box, and check [Custom size].

9. On the [Paging file size for each drive] box, specify as follows:

– A value larger than the recommended size shown in [Total paging file size for all drives] for [Initial size]

– A value larger than the [Initial size] for [Maximum size]

Then click [Set].

IMPORTANT:

- The above-mentioned paging file size is recommended for collecting debug information (memory dump). The paging file with initial size large enough to store the dump file in the boot drive is required.
  Correct debug information might not be able to be collected due to virtual memory shortage when the paging file is insufficient, so set an enough size of the paging file with the entire system.
- For more information on "Recommended" value, see "About the System Partition Size" described earlier.
- In case the memory is expanded, re-specify the paging file to suit the new memory size.

10. Click [OK].

The message to restart the system may appear according to the modified specification.

In such case, follow the message to restart the system.

Memory Dump (Debug Information) - Windows Server 2003 -

This section describes the procedures for collecting memory dump (debug information) in the server.

IMPORTANT: Cautions for the Memory Dump

- The staff of maintenance service representative is in charge of collecting memory dump. Customers need only to specify the memory dump.
- If any trouble occur after specifying the process below, the message to inform that the system is in short of virtual memory may appear, but continue to start the system. If you restart the system in such case, memory dump may not be stored correctly.

Follow the procedure below to specify.

1. Select [Control Panel] and click [System].

   The [System Properties] dialog box appears.

2. Select [Advanced] tab.
3. Click [Settings] on the [Startup and Recovery] group box.

IMPORTANT:

Windows Server 2003 x64 Editions

- To specify "Complete Memory Dump" to write the debug information is recommended.
  If the mounted memory size is larger than 2GB, "Complete Memory Dump" cannot be specified so that specify "Kernel Memory Dump" instead.
- Specify the drive where there is a free area more than the size of "the memory capacity mounted on Express server + 1MB".
- In case the mounted memory size exceeds 2GB due to the added memory, change the write debugging information to [Kernel Memory Dump] before adding memory. The size of debugging information (memory dump) to be taken also changes due to adding memory. Verify the size of the empty space in the debugging information (memory dump) write destination drive.

Windows Server 2003

- To specify "Complete Memory Dump" to write the debug information is recommended.
  If the mounted memory size is larger than 2GB, "Complete Memory Dump" cannot be specified so that specify "Kernel Memory Dump" instead.
- Specify the drive where there is a free area more than the size of "the memory capacity mounted on Express server + 12MB"(In case the memory capacity is more than 2GB, a free area of "2048+12MB" or more).
- In case the mounted memory size exceeds 2GB due to the added memory, change the write debugging information to [Kernel Memory Dump] before adding memory. The size of debugging information (memory dump) to be taken also changes due to adding memory. Verify the size of the empty space in the debugging information (memory dump) write destination drive.

4. Specify "Complete memory dump" and modify [Dump file:] in the [Write debugging information] group box.

e.g. Write the debug information in D drive write the file name "MEMORY.DMP".
D:\MEMORY.DMP

5. Click [Settings] on the [Performance] group box.

   The [Performance Options] window appears.

6. Click [Advanced] tab on the [Performance Options] window.

7. Click [Change] on the [Virtual memory] group box.

8. Modify [Initial Size] in the [Paging file size for selected drive] box to the value larger than the value of [Recommended] in the [Total paging file size for all drives], and click [Set].

   IMPORTANT:

   - The above-mentioned paging file size is recommended for collecting debug information (memory dump). The paging file with initial size large enough to store the dump file in the boot drive is required.
     Correct debug information might not be able to be collected due to virtual memory shortage when the paging file is insufficient, so set an enough size of the paging file with the entire system.
   - For more information on "Recommended" value, see "About the System Partition Size" described earlier.
   - In case the memory is expanded, re-specify the paging file to suit the new memory size.

9. Click [OK].

   The message to restart the system may appear according to the modified specification. In such case, follow the message to restart the system.

How to Create a User-mode Process Dump File

When the system is Windows Server 2008

"User-mode Process Dump" is the file that records information when any application error occurs.

When any application error occurs, do not close the pop-up window that notifies the error, and then collect a dump using following process.

1. Right-click a blank part of the taskbar and click [Task Manager], or press Ctrl + Shift + Esc to start [Task Manager].
2. Click [Processes] tab.
3. Right-click on process name that you want to collect dump, and then click [Create Dump File].
4. The dump file is stored in following directory.

   C:\Users\<User Name>\AppData\Local\Temp

   NOTE: The folder may be treated as hidden folder. If the folder does not appear, run Explorer and select [Tools] - [Folder Options...] - [View], and check to [Show hidden files and folders].

   When the User-mode Process Dump is created, pick up the file from the directory described in Step 4.

   Refer to Knowledge Base of Microsoft web-site for more information about the User-mode Process Dump file collection.

   "How to create a user-mode process dump file in Windows Server 2008"

   http://support.microsoft.com/kb/949180/en-us

   NOTE: For Windows Server 2008, Dr. Watson is replaced by [Problem Reports and Solutions], therefore, you can not collect the Crash Dump file by existing Dr. Watson.

   The above process provides you the information same level as the Crash Dump file.

When the system is Windows Server 2003 (Dr.Watson)

Dr. Watson is a debugger for application errors. If any application error is detected, Dr. Watson diagnoses the server and logs diagnostic information (log). Follow the procedure below and specify Dr. Watson to collect diagnostic information.

1. Click [Run] on Start menu.
2. Type "drwtsn32.exe" in the [Open] box, and click [OK].

   The [Dr. Watson for Windows] dialog box appears.
3. Specify the location to store the diagnostic information in the [Log File Path] box.

   The diagnostic information will be stored with the file name "DRWTSN32.LOG".

   NOTE: You can not specify network pass. Specify the pass on local computer.
4. Specify the location of crash dump file in the [Crash Dump] box.

   NOTE: "Crash Dump File" is a binary file that can be read with Windows Debugger.
5. Check the following check box on the [Options] box.

   ☐ Dump Symbol Table
   ☐ Dump All Thread Contexts
   ☐ Append TO Existing Log File
   ☐ Create Crash Dump File

   For more information on each function above, refer to Online Help.
6. Click [OK].

Network Monitor

Utilizing Network Monitor helps you to investigate and manage with network trouble.

Network Monitor Setup (Windows Server 2008)

Microsoft Network Monitor allows you to examine and troubleshoot network problems.

> **NOTE:** Windows Server 2008 does not provide Network Monitor. To use Network Monitor on Windows Server 2008, install Network Monitor by following the steps below.

1. Download Microsoft Network Monitor from the following web site:
   http://support.microsoft.com/kb/955998/en-us
2. Run the downloaded file to start the installer.

   Follow the on-screen instructions to install Network Monitor.

   > **NOTE:** If a Security Alert appears, click [Run]. Select [Complete] for a setup format.

3. Network Monitor is installed.

   > **NOTE:** To remove Network Monitor, go to [Programs and Features].

Network Trace Capture (Windows Server 2008)

1. On the Start menu, start Microsoft Network Monitor.
2. On [Start Page], select [Create a new capture tab...] or select [New] in the [File] menu, and click [Capture...].

   A new tab for capturing a network trace is created.
3. On the [Select Networks] window, select a network you want to capture a trace.
4. On the [Capture] menu, click [Start] to start capturing a network trace.
5. On the [Capture] menu, click [Stop] to stop capturing a network trace.
6. On the [File] menu, select [Save As...].

   The [Save As] window appears. Select [All captured frames] from [Frame selection], and enter the names of a folder and a file.

   > **NOTE:** The default folder name is:
   > C:\Users\<User name>\Documents\Network Monitor 3\Captures

7. Click **Save** to create the file in the folder selected in step 6.

Network Monitor (Windows Server 2003)

To utilize Network Monitor, you need to restart the system after the installation has completed, so we recommend to install Network Monitor before any network trouble may occur.

1. Point to [Settings] from Start menu and click [Control Panel].

   The [Control Panel] dialog box appears.

2. Double-click [Add or Remove Programs].

   The [Add or Remove Programs] dialog box appears.

3. Click [Add/Remove Windows Component].

   The [Windows Components Wizard] dialog box appears.

4. Click [Management and Monitoring Tools] and then click [Details].

   The [Management and Monitoring Tools] dialog appears.

5. Click to select the [Network Monitor Tools] check box, and then click [OK].

6. The [Windows Components Wizard] dialog box appears again, so click [Next].

7. If the setup asks to install the disk, insert the OS CD-ROM into optical disk drive and click [OK].

8. Click [Finish] in the [Windows Component Wizard] dialog box.

9. Close the [Add or Remove Programs] dialog box.

10. Close the [Control Panel] dialog box.

To start Network Monitor, point to [Program] → [Administrative Tools] and click [NetworkMonitor]. For information on how to operate Network Monitor, refer to Online Help.

Re-installing the Operation System if Multiple Logical Drives Exist

Before Re-installing the Operation System

Be sure to make backup copies before re-installing the operation system just in case.

Re-installing the Operation System

1. Start the clean installation following the procedure described in this manual.
2. Specify the partition in which you want to install the operating system when the following message appears:

   > The following list shows the existing partitions and
   > unpartitioned space on this computer.
   >
   > Use the UP and DOWN ARROW keys to select an item in the list.

   * Cannot modify the drive letter of your system or boot volume. Confirm the proper drive letter is assigned and then, continue the setup.
3. Continue the clean installation again following the procedure described in this manual.
4. The drive letter of the re-installed system may differ from the one of the previous system. If you need to modify the drive letter, modify it according to the "Procedure for Modifying the Drive Letter".

Procedure for Modifying the Drive Letter

Be careful that the drive letter of the system or boot volume cannot modify with the following procedure.

1. Click Start menu, right-click [My Computer], and specify [Manage] to start [Computer Management].
2. Specify the [Disk Management] in the left side of the window.
3. Right-click the volume you want to modify the drive letter and specify the [Change Drive Letter and Path...].
4. Click [Yes].
5. Choose the [Assign a drive letter] and specify the drive letter you want to assign.
6. Click [OK].
7. If the following message appears, click [Yes].

> Changing the drive letter of a volume may cause programs to no longer run. Are you sure you want to change this drive letter?

8. Close the [Computer Management].

INSTALLING MAINTENANCE UTILITIES

Various maintenance utilities are contained in your NEC EXPRESSBUILDER DVD. See Chapter 6 for installing the utilities to your server or management workstations.

UPDATING THE SYSTEM

"Updating the System" is executed by Express Setup automatically.

Execute "Updating the System" in following cases.

- Modified system configuration.
- Recovered the system using recovery process.

See "Updating the System" section in Appendix B for detail of update process.

MAKING BACKUP COPIES OF SYSTEM INFORMATION

The system information includes the current BIOS settings and any specific information for the server.

Save the information after completing the system setup.

Without the backup data, you will not be able to recover the information.

You can save the information by the following process.

1. Insert the "NEC EXPRESSBUILDER" DVD into the optical disk drive and reboot the system.
2. Select [Tool menu (Normal mode)].
3. Select [English].
4. Select [Maintenance Utility].
5. Select [System Information Management].
6. Insert a floppy disk into the floppy disk drive.
7. Select [Save].

Installing with the OEM-FD for Mass Storage Device

This section explains how to setup with the OEM-FD. You usually do not have to do as follows. If your system has any Mass storage devices, you have to set as follows depending on your system. The detailed information is provided by the manual of the Mass storage device.

Creating new RAID using N8403-026 (RAID Controller), N8403-027 (SATA Interface card)

If you create new RAID using N8403-026 (RAID Controller), N8403-027 (SATA Interface card), create RAID by following procedure before installing Windows Server 2008.

If you do not need to create new RAID, this procedure is not required.

Case of creating RAID using [EXPRESSBUILDER].

1. Boot from the EXPRESSBUILDER DVD.
2. Select [Perform the Express setup] from the Top Menu, click [Next].
3. When [Load parameters] screen is displayed, if you do not need to load parameters, select [Do not load parameters] and click [Next].
4. Select [Install other Operating System] at [Select OS] steps, and then click [Next].
5. Select [Create a logical drive using the settings that follow] at [Enter RAID settings] steps.

   Confirm the parameters, modify if necessary, and then click [Next].
6. Save parameters at [Save parameters] steps.

   If you do not need to save parameters, select [Do not save parameters], and click [Next].
7. Click [Perform] at [Configuring RAID] steps.

   RAID configuration is started.
8. When [Exit EXPRESSBUILDER] screen is displayed, click [Perform] again.

   The system reboots.

   Reboot from EXPRESSBUILDER DVD, and then perform Express Setup referring to [Installing the Operating System with Express Setup].

> **NOTE:** When you start Express Setup, select [Skip the logical drive creation] at Step 4 [Enter RAID settings] screen.

Installation of Mass storage device not to be supported by Express Setup

If you would like to install or re-install the OS when the system has new mass storage device not to be supported by NEC EXPRESSBUILDER, you have to set as follows.

1. Read the manual supplied with the mass storage device before setting the server.
2. If the mass storage device is RAID Controller, configure the RAID System before running the NEC EXPRESSBUILDER.
3. Boot the system from NEC EXPRESSBUILDER DVD.
4. Select [Load the optional driver into the EXPRESSBUILDER] from the Top menu, click [Next].

   Setting the driver disk for the mass storage controller. Press the "Perform" button.

   NOTE: By choosing this option, you can load the driver provided by CD-ROM or floppy disk to proceed with the Express Setup.

5. Perform Express Setup with the following settings.

   (a) When "Enter RAID settings" appears, check "Skip the logical drive creation".

   (b) Select "Apply OEM-Disk for Mass storage device".

6. Copy the driver for the mass storage device in the Express Setup.

   Insert the floppy disk attached the mass storage device into the floppy disk drive.

   Continue the Express Setup, referring to messages displayed on the display.

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Chapter 6

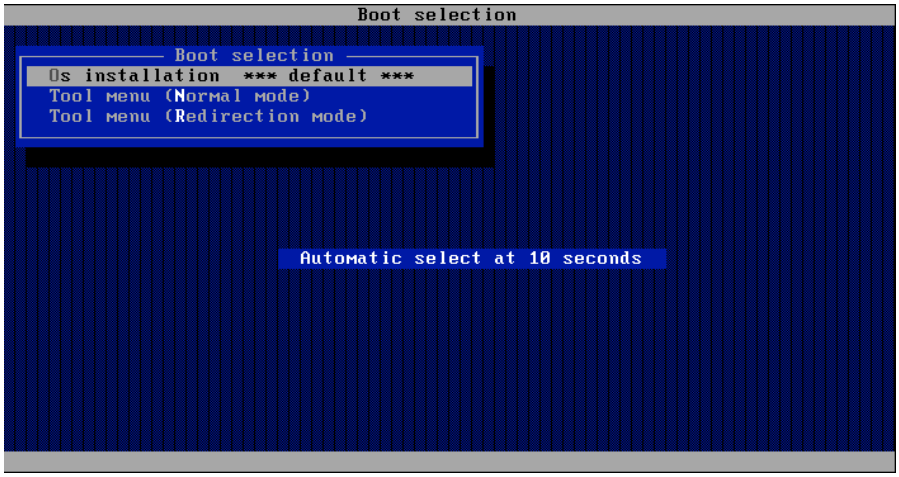
Installing and Using Utilities

This section describes how to use the NEC EXPRESSBUILDER DVD that comes with your server and to install the utilities stored on the NEC EXPRESSBUILDER.

NEC EXPRESSBUILDER

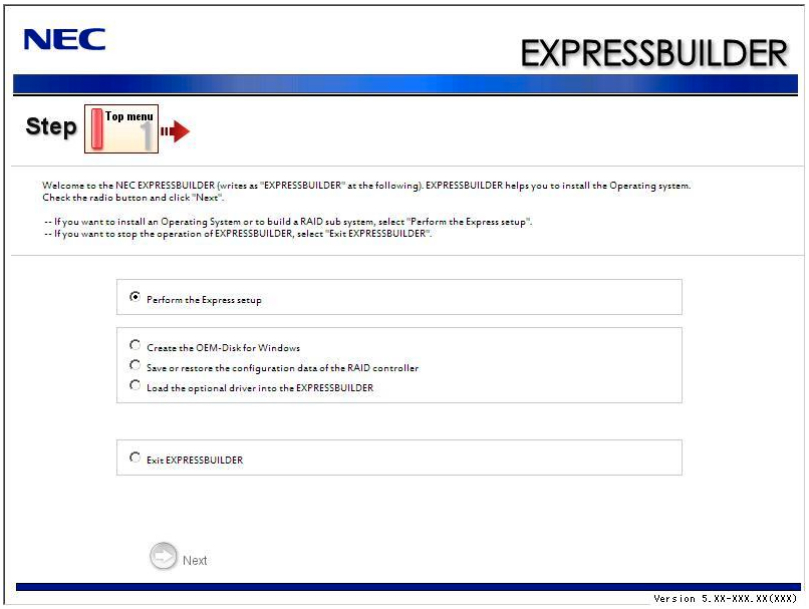
The NEC EXPRESSBUILDER (referred to as "EXPRESSBUILDER" hereinafter) helps you install the Operating system/the Management software or use the maintenance utilities.

When you insert the EXPRESSBUILDER disk into the DVD drive and reboot the system, the following menu appears.



■ OS installation

If you select this item, the Top menu appears.


NEC
EXPRESSBUILDER
Step
Top menu
Welcome to the NEC EXPRESSBUILDER (writes as "EXPRESSBUILDER" at the following). EXPRESSBUILDER helps you to install the Operating system.
Check the radio button and click "Next".
-- If you want to install an Operating System or to build a RAID sub system, select "Perform the Express setup".
-- If you want to stop the operation of EXPRESSBUILDER, select "Exit EXPRESSBUILDER".
Perform the Express setup
Create the OEM-Disk for Windows
Save or restore the configuration data of the RAID controller
Load the optional driver into the EXPRESSBUILDER
Exit EXPRESSBUILDER
Next
Version 5.XX-XXX.XX(XXX)

IMPORTANT:

- This tool is Configuration Tool that built on Windows PE 2.0 technology.
  Pay attention to the automatic reboot that occurs after 72 hours from start.
- The configuration with Windows PE 2.0 supports Windows Server 2003 (32bit) and Windows Vista Business (32-bit (x86)), but the other operation is not supported.

You can use the Express Setup (see Chapter 5) or the following functions from this menu.

– Create the OEM-Disk

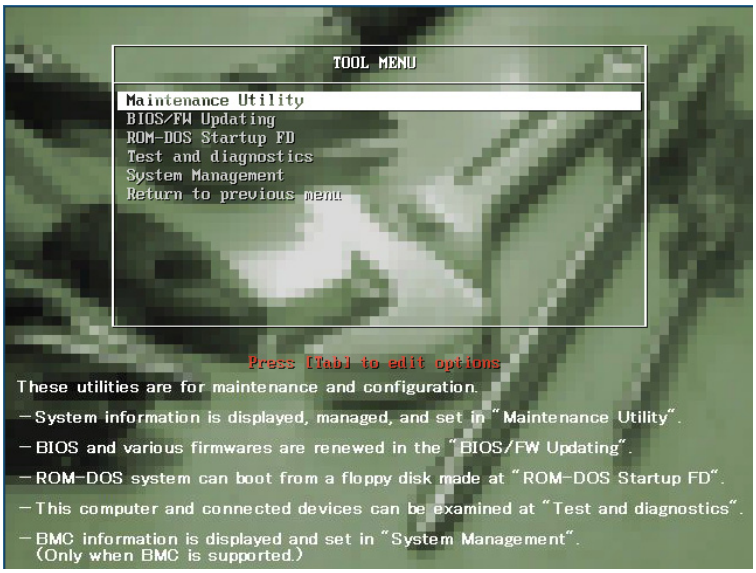
  You can create the Windows OEM-Disk to use at the Windows manual setup.

– Load the driver

  This function is not usually used. If you add the new device to the server, this function may use. (See Chapter 5.)

■ Tool menu (Normal mode)

If you select this item, the Tool menu appears.


TOOL MENU
Maintenance Utility
BIOS/FW Updating
ROM-DOS Startup FD
Test and diagnostics
System Management
Return to previous menu
Press [Tab] to edit options
These utilities are for maintenance and configuration.
－System information is displayed, managed, and set in "Maintenance Utility".
－BIOS and various firmwares are renewed in the "BIOS/FW Updating".
－ROM-DOS system can boot from a floppy disk made at "ROM-DOS Startup FD".
－This computer and connected devices can be examined at "Test and diagnostics".
－BMC information is displayed and set in "System Management".
(Only when BMC is supported.)

You can use the below functions for maintenance.

– Maintenance Utility

  The Maintenance Utility is usually used by the service representative. (See Chapter 8.)

– BIOS/FW Updating

  You can update the system BIOS by using the floppy disk (prepare a 3.5" floppy disk).

– ROM-DOS Startup FD

  The ROM-DOS Startup FD is used for starting the ROM-DOS system.

– Test and diagnostics

  This function allows you to diagnose this computer. (See Chapter 7.)

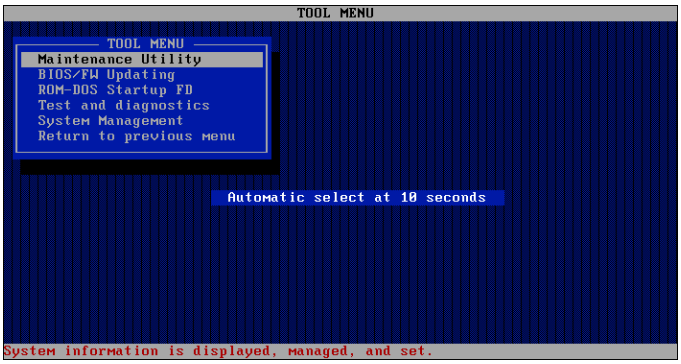
– System Management

  You can configure the parameters of BMC (Baseboard Management Controller).

■ Tool menu (Redirection mode)

If you want to operate this computer via the BIOS redirection (the console-less function), select this item.

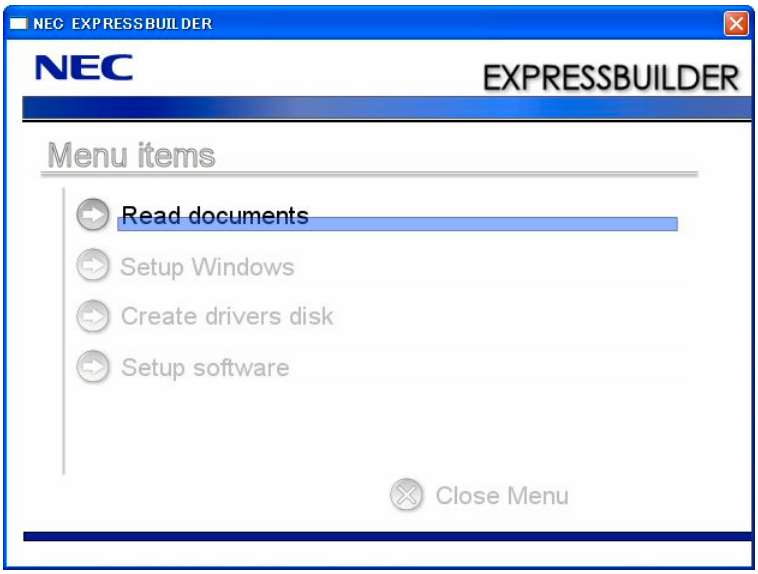
NOTE: If you operate this computer via the Remote KVM function, select the "Tool menu (Normal mode)".



The menu's functions are the same as the "Tool menu (Normal mode)".

Autorun Menu

When the NEC EXPRESSBUILDER disk is inserted into the DVD drive, Windows automatically launches the menu as shown below.



This menu is used to,

- Read the User's Guide or the other documents,
- Update the server system (Windows drivers), and
- Install the management software.

NOTES:

- This menu requires Microsoft Windows XP, Vista or Windows Server 2003 (or later).
- Some documents are provided in PDF format. Use the Adobe Reader to view or print these documents.

If the menu does not appear, select "My computer" by using the Explorer, and double-click the icon of the DVD drive that contains the NEC EXPRESSBUILDER DVD.

Some menu items are grayed-out when the logon user does not have the authority of the administrator or the menu item is not available for your system.

To use the menu,

- Click on the menu items, or
- Click the right mouse button on the menu window.

PARAMETER FILE CREATOR

"Parameter File Creator" is a tool to create [Parameter file] that is used for configuring the server with the Express Setup (see Chapter 5 for details).

If you use the Parameter file created by the Express Setup and Parameter File Creator to operate the setup, you can setup from the installation of OS to several utilities automatically except for a few key input to confirm the specification. Also, you can install the system with the same specification as before when re-installing the system. We recommend you to create [Parameter file] to setup the servers from NEC EXPRESSBUILDER.

When using a floppy disk, a USB floppy disk drive is required.

IMPORTANT: You can not create [Parameter file] for Microsoft Windows Server 2003 x64 Editions.

NOTE: You can install Windows Server 2003 without [Parameter file]. Also, you can modify/newly create [Parameter file] during the setup with NEC EXPRESSBUILDER.

Parameter File

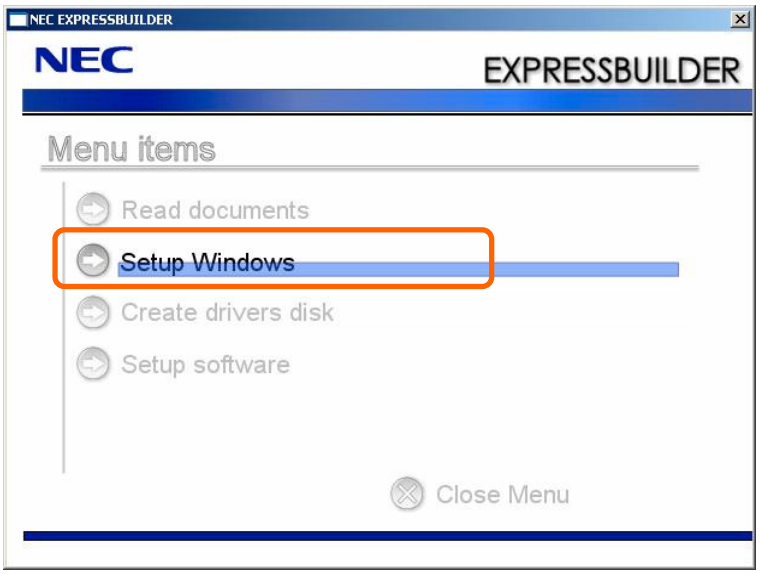
This section describes about specifying setup information that is necessary for OS installation and creating [Parameter file].

Follow the procedure below.

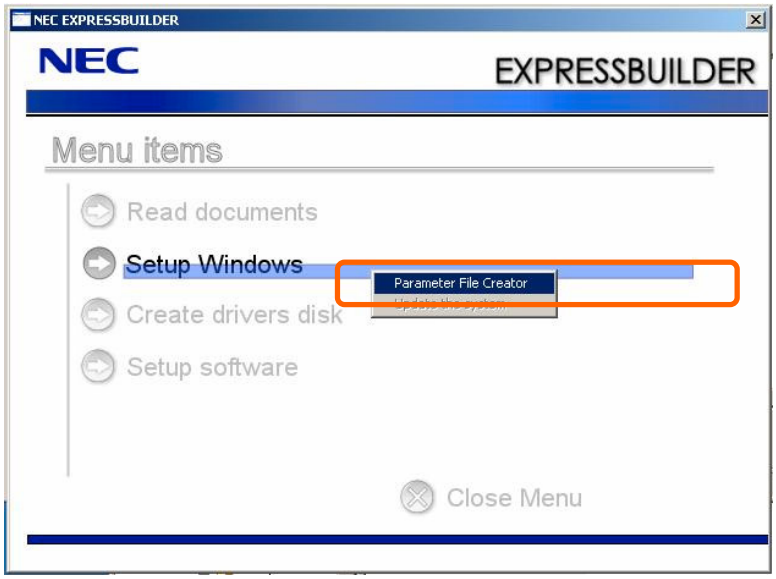
> **IMPORTANT:** Do not remove NEC EXPRESSBUILDER DVD from drive during a parameter file creation.

1. Start the OS.
2. Insert the NEC EXPRESSBUILDER DVD into the optical disk drive.

   The menu will appear.
3. Right-click on the screen or left-click [Setup Windows]. The menu will appear.



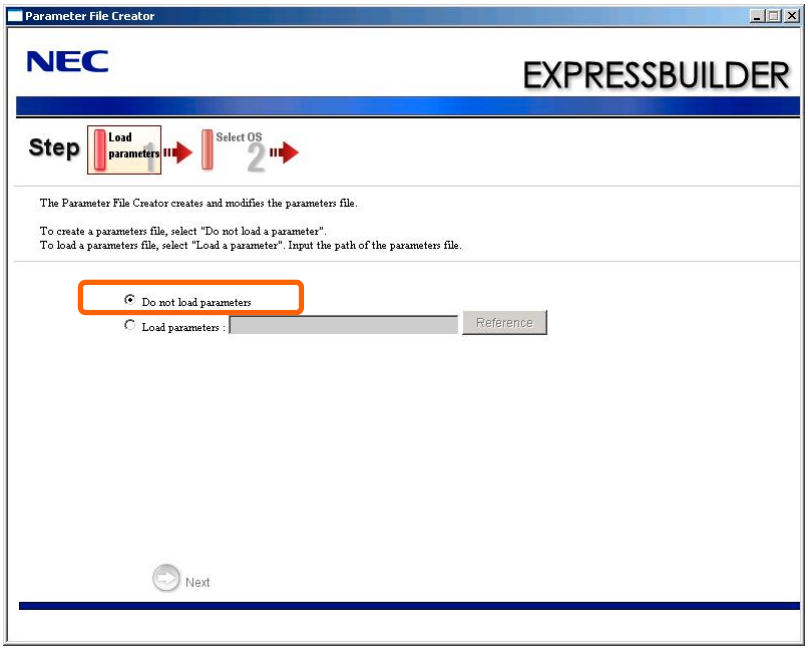
4. Click [Parameter File Creator].



Parameter File Creator will appear.

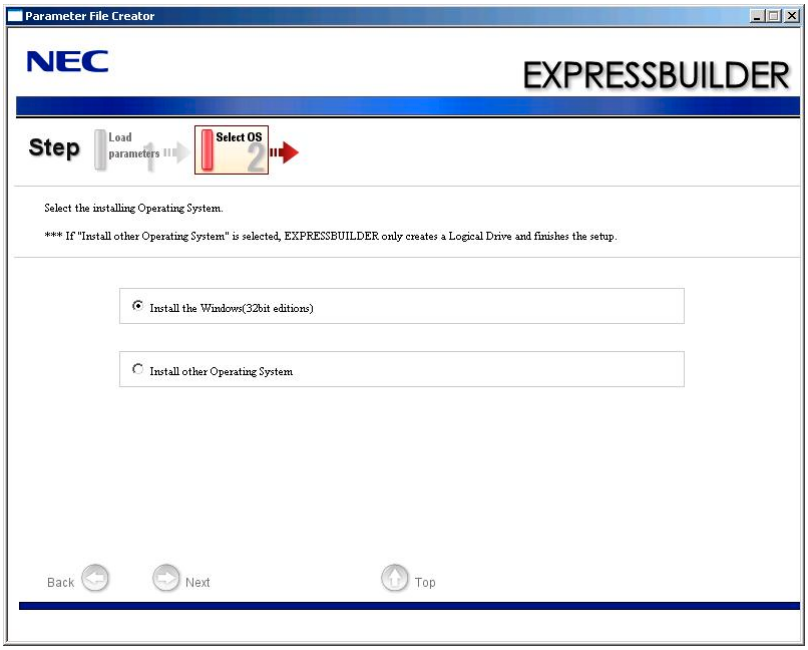
5. [Load Parameters] step is displayed.

Select [Do not load parameters] from the menu, click [Next].


Parameter File Creator
NEC
EXPRESSBUILDER
Step
Load parameters
Select OS
The Parameter File Creator creates and modifies the parameters file.
To create a parameters file, select "Do not load a parameter".
To load a parameters file, select "Load a parameter". Input the path of the parameters file.
Do not load parameters
Load parameters :
Reference
Next

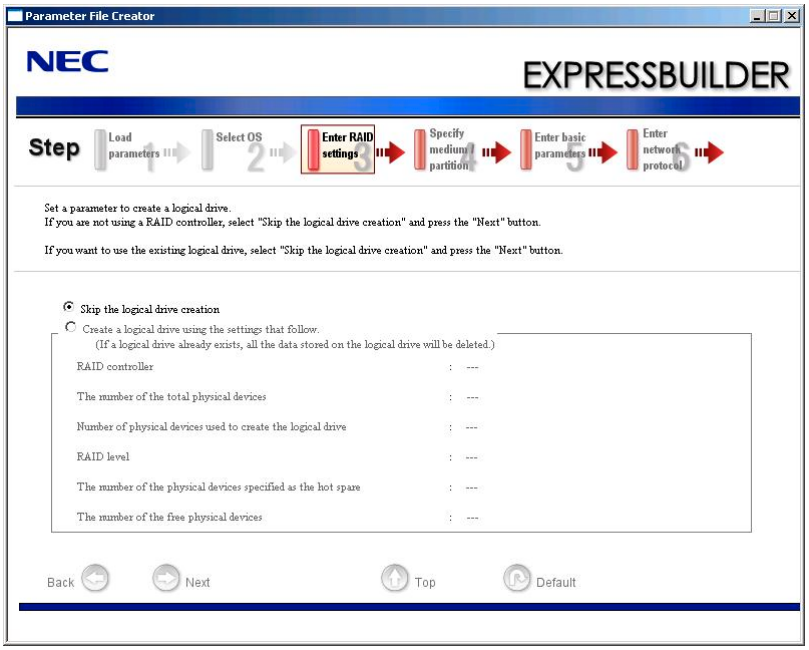
6. Select the installing Operating System.

Select [Install the Windows (32bit editions)] from the menu, click [Next].



7. Enter the setting of a logical drive.

[Enter RAID setting] steps are displayed. Confirm the parameters, modify if necessary, and then click [Next].

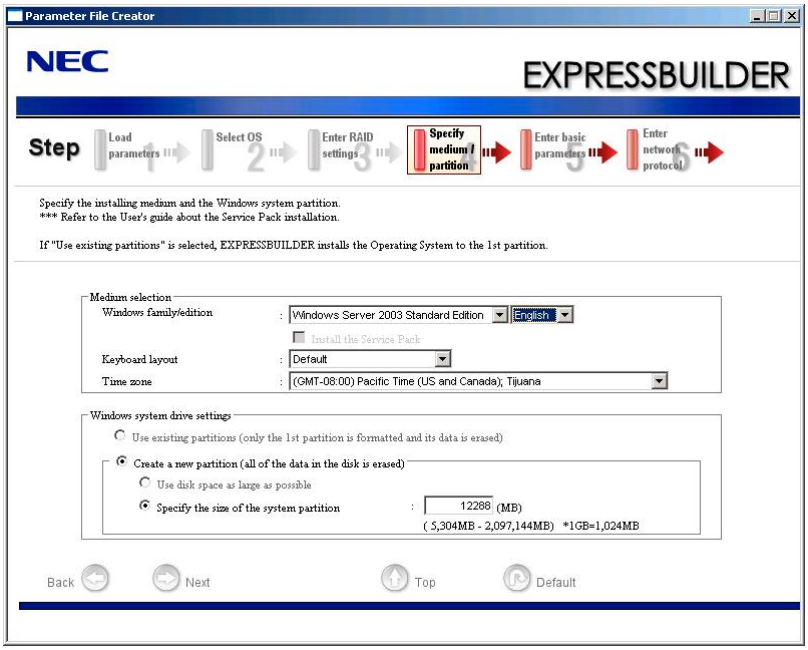

Parameter File Creator
NEC
EXPRESSBUILDER
Step
Load parameters
Select OS
Enter RAID settings
Specify medium/ partition
Enter basic parameters
Enter network protocol
Set a parameter to create a logical drive.
If you are not using a RAID controller, select "Skip the logical drive creation" and press the "Next" button.
If you want to use the existing logical drive, select "Skip the logical drive creation" and press the "Next" button.
Skip the logical drive creation
Create a logical drive using the settings that follow.
(If a logical drive already exists, all the data stored on the logical drive will be deleted.)
RAID controller : ---
The number of the total physical devices : ---
Number of physical devices used to create the logical drive : ---
RAID level : ---
The number of the physical devices specified as the hot spare : ---
The number of the free physical devices : ---
Back
Next
Top
Default

IMPORTANT: At "The number of the total physical devices", Parameter File Creator displays upper limit that the RAID controller can support.
The total of "The number of physical devices used to create the logical drive" and "The number of the physical devices specified as the hot spare" must not exceed "The number of the total physical devices" which connected to the target system.

NOTE: You can use only the physical devices that have same model number to configure logical drive.

8. Specify the installing medium and the Windows system partition.

[Specify medium / Partition] steps are displayed. Confirm the parameters, modify if necessary, and then click [Next].


Parameter File Creator
NEC
EXPRESSBUILDER
Step
Load parameters
Select OS
Enter RAID settings
Specify medium / partition
Enter basic parameters
Enter network protocol
Specify the installing medium and the Windows system partition.
**** Refer to the User's guide about the Service Pack installation.
If "Use existing partitions" is selected, EXPRESSBUILDER installs the Operating System to the 1st partition.
Medium selection
Windows family/edition
Windows Server 2003 Standard Edition
English
Install the Service Pack
Keyboard layout
Default
Time zone
(GMT-08:00) Pacific Time (US and Canada); Tijuana
Windows system drive settings
Use existing partitions (only the 1st partition is formatted and its data is erased)
Create a new partition (all of the data in the disk is erased)
Use disk space as large as possible
Specify the size of the system partition
12288 (MB)
(5,304MB - 2,097,144MB) *1GB=1,024MB
Back
Next
Top
Default

IMPORTANT:

- About partition size
  - Specify the partition size larger than required minimum size for OS installation.
  - Do not specify larger partition size than the capacity of connected hard disk drive.
  - You can not specify a logical drive larger than 2,097,144MB at RAID system.
- If you select "Create a new partition" at "Windows system drive settings", the contents of the hard disk will be all deleted.
- If "Use existing partitions" is selected, EXPRESSBUILDER installs the Operating System to the 1st partition (1st partition is deleted). The data in the other partition is kept if the system has two or more partitions. (See the figure below.)

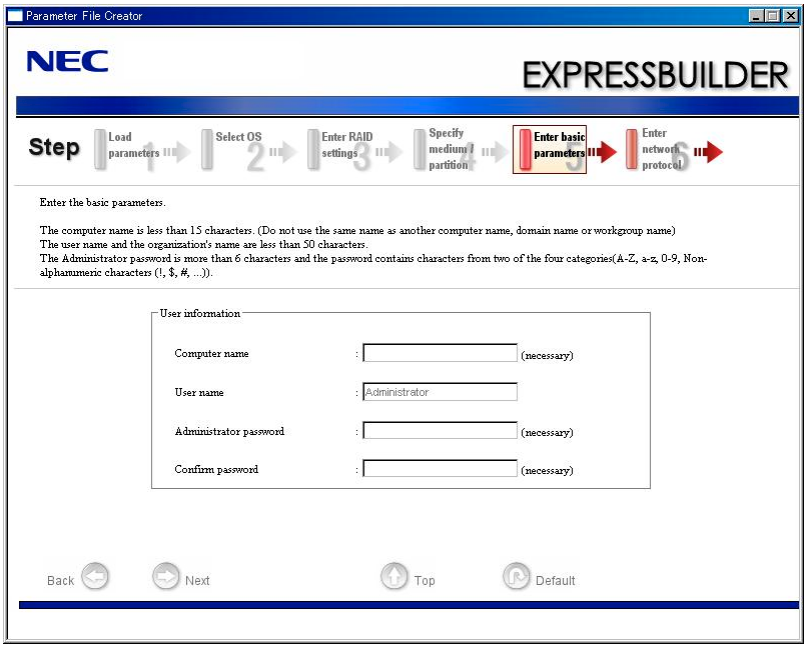
First Partition Deleted	Second Partition Retained	Third Partition Retained

- You can not re-install the system with the existing partition that is upgraded to Dynamic Disk remained. Do not select "Use existing partitions" at "Windows system drive settings".

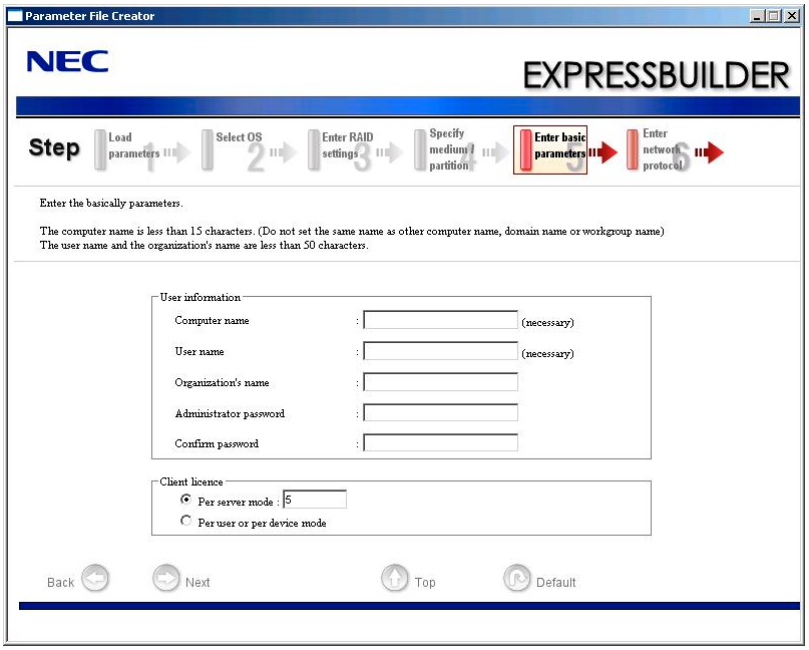
9. Enter the user information and client license mode.

[Enter basic parameters] steps are displayed. Confirm the parameters, modify if necessary, and then click [Next].

– Windows Server 2008


Parameter File Creator
NEC
EXPRESSBUILDER
Step
Load parameters
Select OS
Enter RAID settings
Specify medium / partition
Enter basic parameters
Enter network protocol
Enter the basic parameters.
The computer name is less than 15 characters. (Do not use the same name as another computer name, domain name or workgroup name)
The user name and the organization's name are less than 50 characters.
The Administrator password is more than 6 characters and the password contains characters from two of the four categories(A-Z, a-z, 0-9, Non-alphanumeric characters (!, $, #, ...)).
User information
Computer name
(necessary)
User name
Administrator
Administrator password
(necessary)
Confirm password
(necessary)
Back
Next
Top
Default

– Windows Server 2003



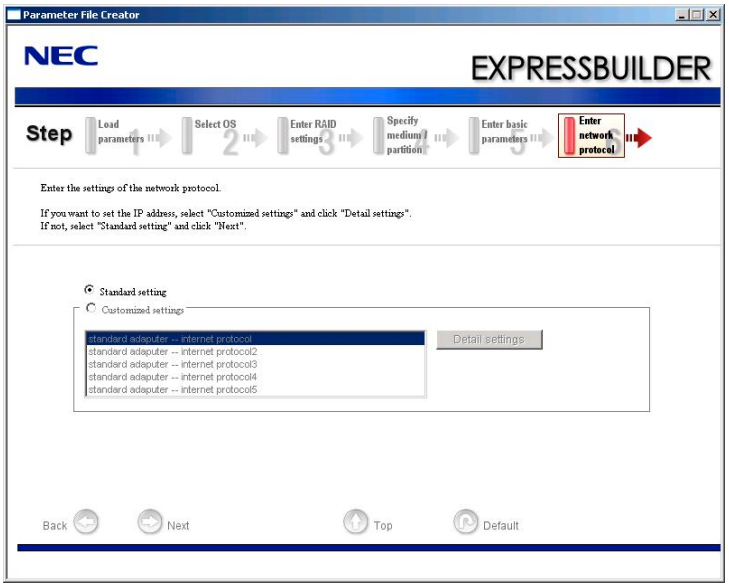
IMPORTANT:

- Windows Server 2003
  Computer name and User name are required parameters.
- Windows Server 2008
  Computer name, and Administrator password that satisfy the next condition, are required.
  - More than 6 characters
  - Contains characters from three of the following categories (numbers, uppercase letters, lowercase letters, and signs).

NOTE: Even if you do not input value into "Administrator password", "Confirm password", "●●●●●●" is displayed.

10. Enter the setting of the network protocol.

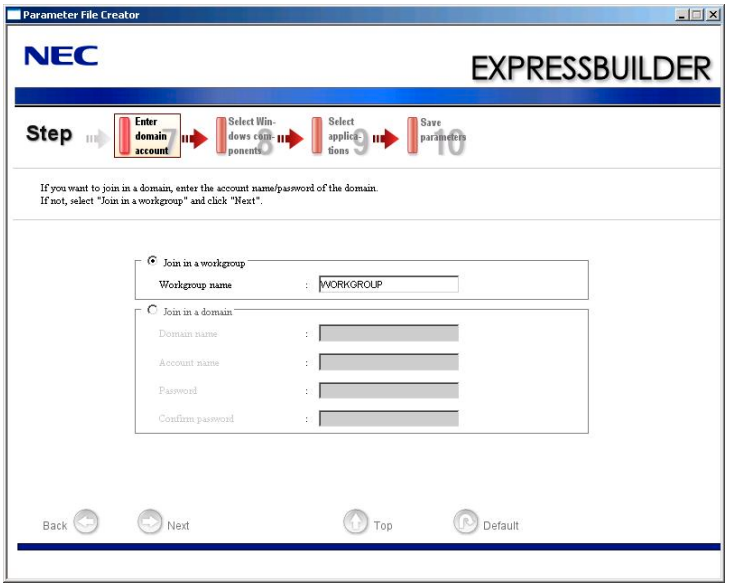
[Enter network protocol] steps are displayed. Confirm the parameters, modify if necessary, and then click [Next].



NOTE: The order of entry in custom setting may differ from the numbering of LAN port.

11. Enter the domain or workgroup name to be used.

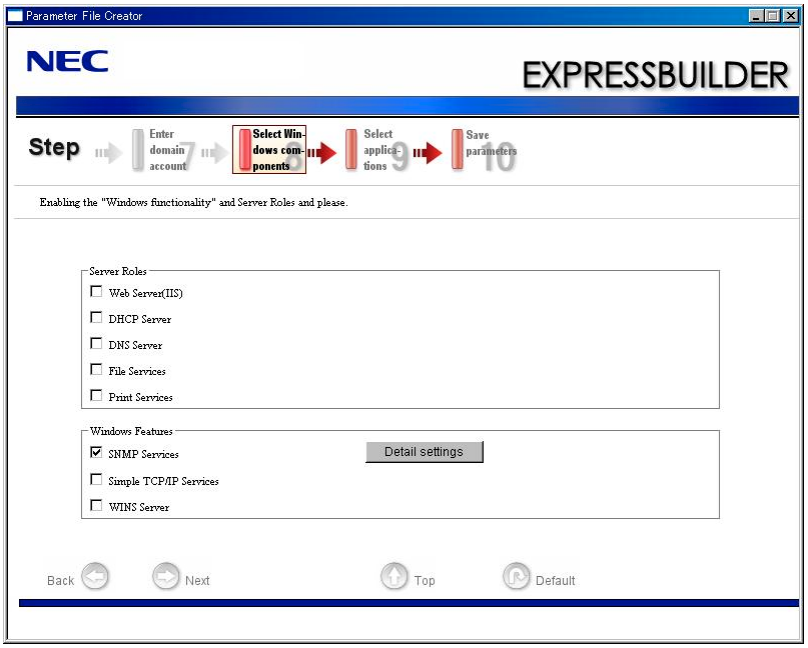
[Enter domain account] steps are displayed. Confirm the parameters, modify if necessary, and then click [Next].



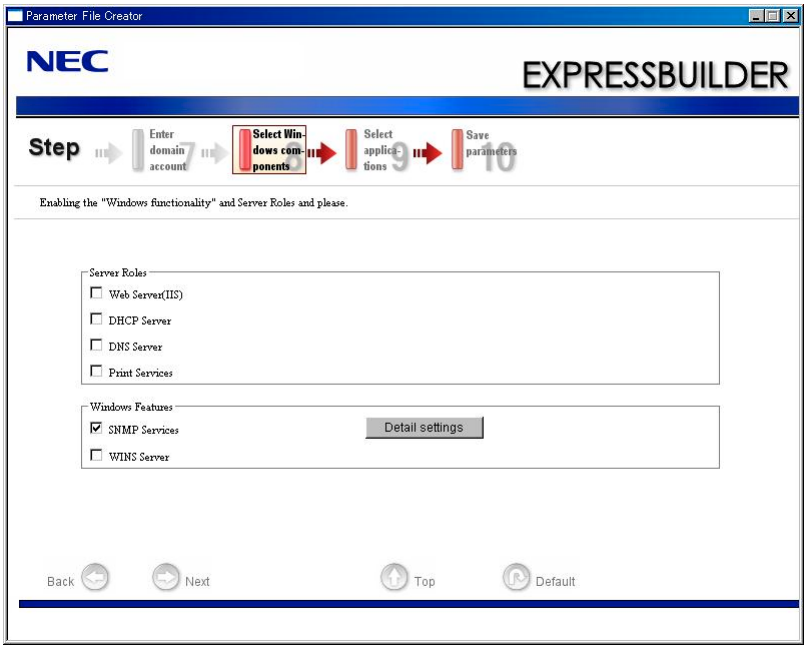
12. Select the installing components.

[Select Windows components] steps are displayed. Confirm the parameters, modify if necessary, and then click [Next].

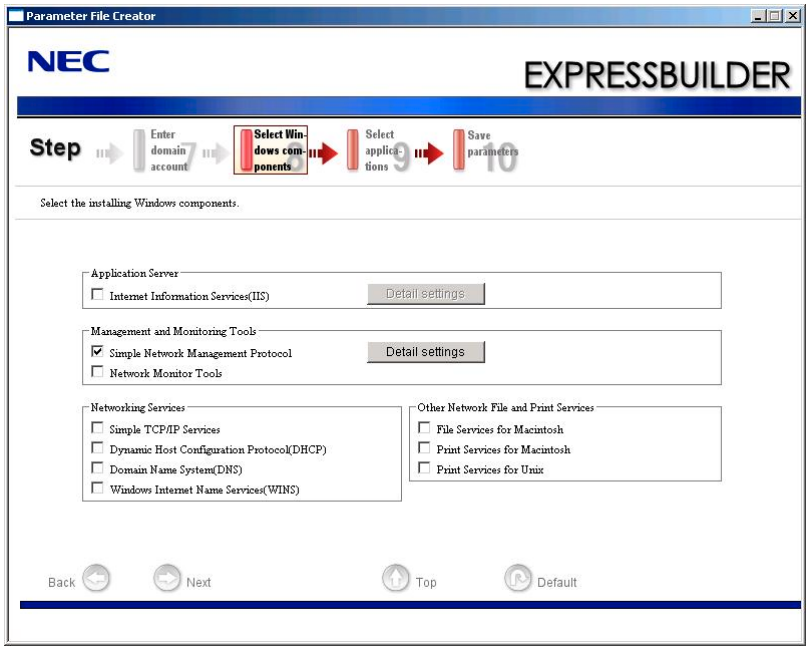
– Windows Server 2008 (Full Installation)



– Windows Server 2008 (ServerCore Installation)

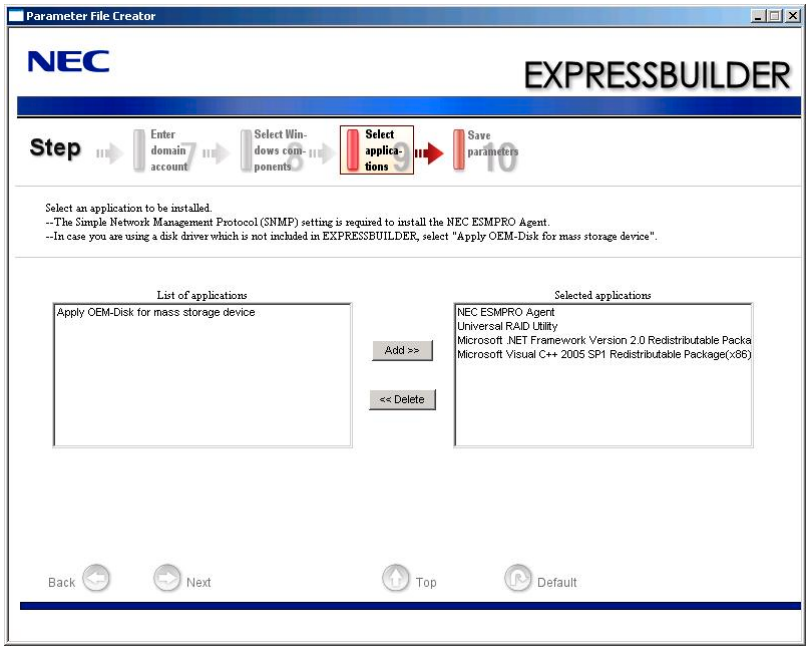


– Windows Server 2003



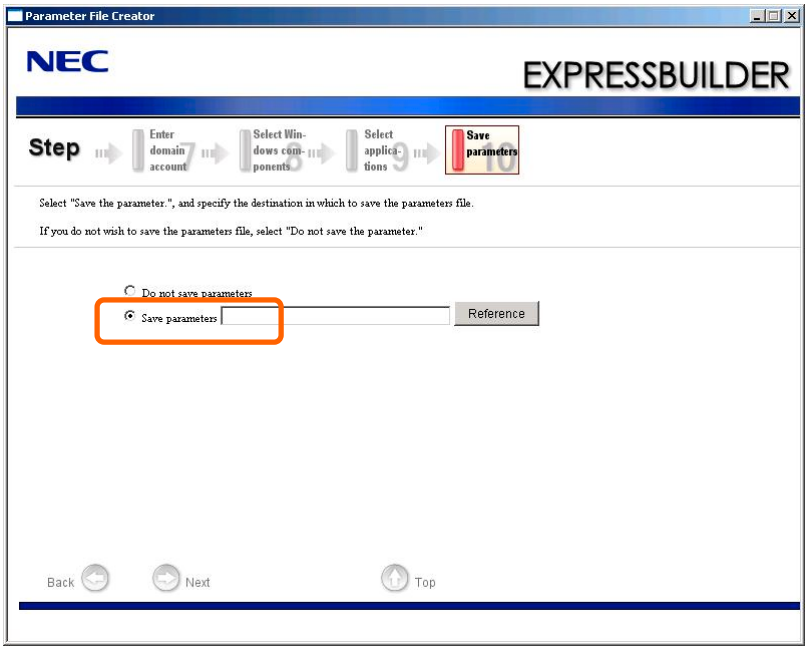
13. Select the installing applications.

[Select applications] steps are displayed. Confirm the parameters, modify if necessary, and then click [Next].


Parameter File Creator
NEC
EXPRESSBUILDER
Step
Enter domain account
Select Windows components
Select applications
Save parameters
Select an application to be installed.
--The Simple Network Management Protocol (SNMP) setting is required to install the NEC ESMPRO Agent.
--In case you are using a disk driver which is not included in EXPRESSBUILDER, select "Apply OEM-Disk for mass storage device".
List of applications
Apply OEM-Disk for mass storage device
Add >>
<< Delete
Selected applications
NEC ESMPRO Agent
Universal RAID Utility
Microsoft .NET Framework Version 2.0 Redistributable Packa
Microsoft Visual C++ 2005 SP1 Redistributable Package(x86)
Back
Next
Top
Default

14. Save the parameters.

[Save parameters] steps are displayed.

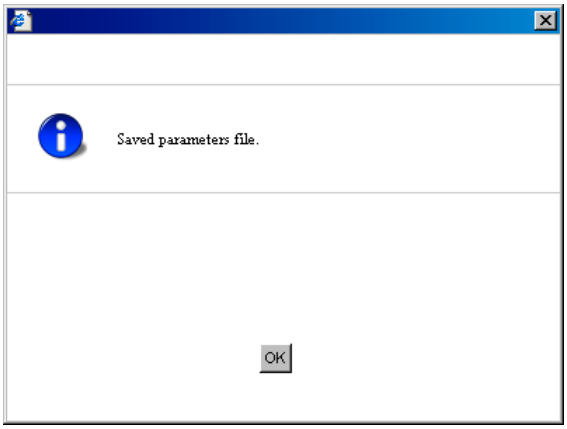


If you want to save the parameters, set the free formatted floppy disk.

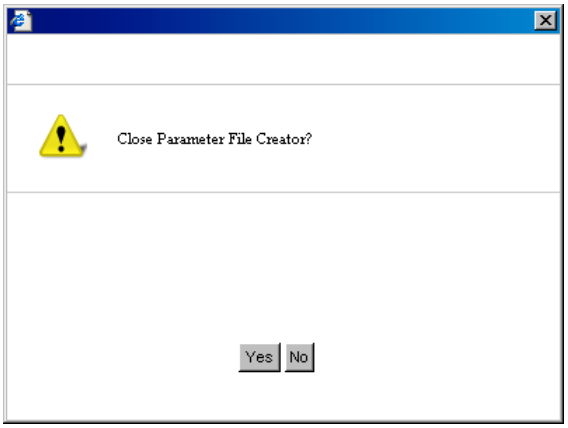
Select [Save parameters], enter the file path of the parameters files into the text box and click [Next].

If not, select [Do not save parameters].

15. Saved to a floppy disk.



Now [the floppy disk containing the parameters file] has been created.



Click [Yes] to exit Parameter File Creator.

NOTES:

- If you modify existing information file (parameter file), click "Load Parameters" at [Load Parameters] screen. Refer to help to modify information file.
- If you cancel operation on the way, click at the upper-right corner of the screen.

NEC ESMPRO

The NEC ESMPRO lets a system administrator manage remote servers across a network. NEC ESMPRO monitors server hardware and software configurations, failures, and performance. With log data collected by NEC ESMPRO, a system administrator can track long-term and short-term performance, monitor server usage, create graphs to record trends, and check server failure rates. The administrator can use the information collected to create more efficient data routing procedures and optimize server usage.

> **IMPORTANT:** For installation procedure and detailed explanations on NEC ESMPRO, refer to the online document in the NEC EXPRESSBUILDER DVD.

The NEC ESMPRO offers many functions and features for managing remote servers across a network. These features help the system administrator perform daily system operation, system extension, and transfer tasks. Some features of NEC ESMPRO Manager include:

- Hardware and software server configuration
  - Hardware resources mounted in servers, such as the CPU, memory, disks, disk arrays, and LAN boards.
  - Software resources, such as operating system information and drivers running on each server.
- Server failures
  - On-screen real-time displays provide the system administrator with the failure type, location, cause, and suggested corrective action.
  - Failure data includes hardware failure information such as system board temperature, memory failure, crashes, and software failure information.
- Performance
  - NEC ESMPRO monitors server performance and displays server usage on the screen and displays information, such as the rate of CPU load, memory usage, disk usage, and LAN traffic. Usage threshold values can help the system administrator monitor and prevent server overloads.

Supplement

Note the following in addition to the NOTE that has been described in the online document for NEC ESMPRO.

- About the Monitoring of Chassis Sensors

  The fan and the power supply installed in Blade Enclosure (SIGMABLADE) are monitored by the EM card.
  The information that the EM card monitors can be confirmed by the EnclosureViewer of NEC ESMPRO Manager.
  In [ESMPRO] - [Enclosure] - [Power Supply] tree in the DataViewer of NEC ESMPRO Manager, the status of the power circuit of CPU blade is displayed.

NEC ESMPRO Agent Extension

The NEC ESMPRO Agent Extension is software for the remote management of this server.

See the online documents for details on the functions and installation of the NEC ESMPRO Agent Extension.

Universal RAID Utility

Universal RAID Utility is an application to manage or monitor the RAID System by using the following.

- N8403-026 RAID Controller
- N8403-027 SATA Interface card

Before attempting to operate Universal RAID Utility, read the "Universal RAID Utility Ver2.0 User's Guide" included in NEC EXPRESSBUILDER DVD. The manual explains the installation procedure and notes on operating Universal RAID Utility.

Setup with Express Setup

You can install Universal RAID Utility with Express Setup contained in NEC EXPRESSBUILDER DVD. When you start the Express Setup, a dialog to specify an application appears. Select [Universal RAID Utility] on the dialog.

Manual Setup

You can start the setup program of Universal RAID Utility from [Autorun Menu].

Click [Setup Software] → [Universal RAID Utility] in [Autorun Menu].

You need to install the following software.

- Microsoft .NET Framework 2.0
- The Runtime component of the Microsoft Visual C++ 2005 SP1

You can install these software from [Autorun Menu] too.

Click [Setup Windows] → [Install the .NET Framework Ver 2.0 Redistributable Package(x86)] (If CPU architecture is x64, [Install the .NET Framework Ver2.0 Redistributable Package(x64)]) in [Autorun Menu] for the setup of Microsoft.NET Framework 2.0.

Click [Setup Windows] → [Install the Microsoft Visual C++ 2005 SP1 Redistributable Package(x86)] (Use the x86 package whatever the CPU architecture may be.) for the setup of the Runtime component of the Microsoft Visual C++ 2005 SP1.

Using Universal RAID Utility via Network

Universal RAID Utility does not support the function to manage the computer containing RAID Controller via network. If you want to manage it via network, use the function of remote console (ex. Remote Desktop of Windows).

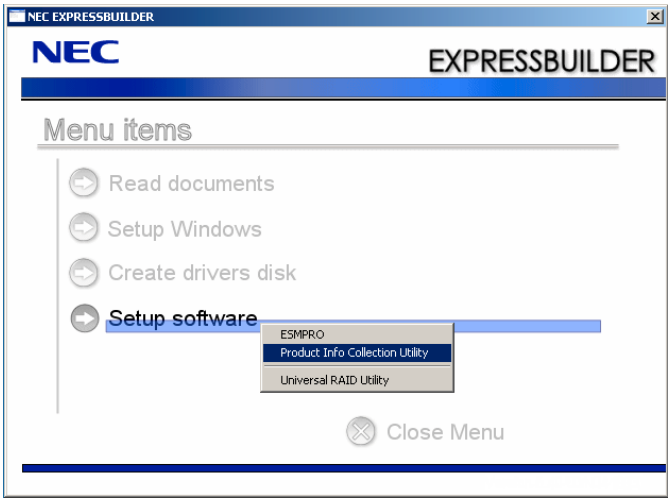
NEC PRODUCT INFO COLLECTION UTILITY

The NEC Product Info Collection Utility is software installed in this server.
Various information on the server can be collected at maintenance and the trouble, etc.
This utility can be installed from NEC EXPRESSBUILDER DVD.

Installation

The procedure when individually installing it is shown as follows.

1. Insert NEC EXPRESSBUILDER DVD in the optical disk drive after OS starts.
2. Click from the menu displayed with Auto-run in order of [Setup software] – [Product Info Collection Utility].
3. The installation of this utility is started. (It is installed in "System drive: \ezclct" folder.)



IMPORTANT: Please log-in the system in account with the administrator authority.

Using Utility

Execute collect.exe in "System drive: \ezclct\stdclct" folder.

The log folder is made in the above-mentioned folder, and various information on this device is stored in the data compressed file (zip form).

Uninstallation

Execute ez_uninst.bat in "System drive: \ezclct" folder.

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Chapter 7

Maintenance

This chapter describes the daily maintenance of the CPU blade and precautions when relocating or storing the CPU blade.

MAKING BACKUP COPIES

NEC recommends you make backup copies of your valuable data stored in hard disk drives of the CPU blade on a regular basis. For backup storage devices suitable for the CPU blade and backup tools, consult with your service representative.

When you have changed the hardware configuration or BIOS configuration, select "System Information Management" and then "Save" of the Off-line Maintenance Utility to make a backup copy of the system information.

Also make a backup copy of the disk array configuration data if your system is in the array configuration. When your hard disk drives have been auto-rebuilt due to a failure, it is recommended to make a backup copy of the configuration data. To make a backup copy of the configuration data, refer to the manual that comes with the disk array controller.

SYSTEM DIAGNOSTICS

The System Diagnostics runs several tests on the CPU blade.

Select [Tool menu] - [Test and diagnostics] in the NEC EXPRESSBUILDER to diagnose the system.

Test Items

The following items are tested in system diagnostics.

- Memory
- CPU cache memory
- Hard disk drive used as a system

IMPORTANT: When executing the System Diagnostics, make sure to disconnect the CPU blade from the network. Executing the System Diagnostics with the CPU blade being connected to the network, the network may be influenced.

NOTE: On checking the hard disk drive, no data is written into the disk.

Startup and Exit of System Diagnostics

There are two ways to diagnose the CPU blade: to use the local console (keyboard) connected to the Blade Enclosure, and to use the management PC via serial port (remote console).

> **IMPORTANT:** Two methods of LAN and the serial port are mentioned in "MAINTENANCE TOOLS" of Chapter 8 "Troubleshooting" in the way of communicating in remote console.
> Use the serial port to execute System Diagnostics with remote console. The LAN connection is not for System Diagnostics.

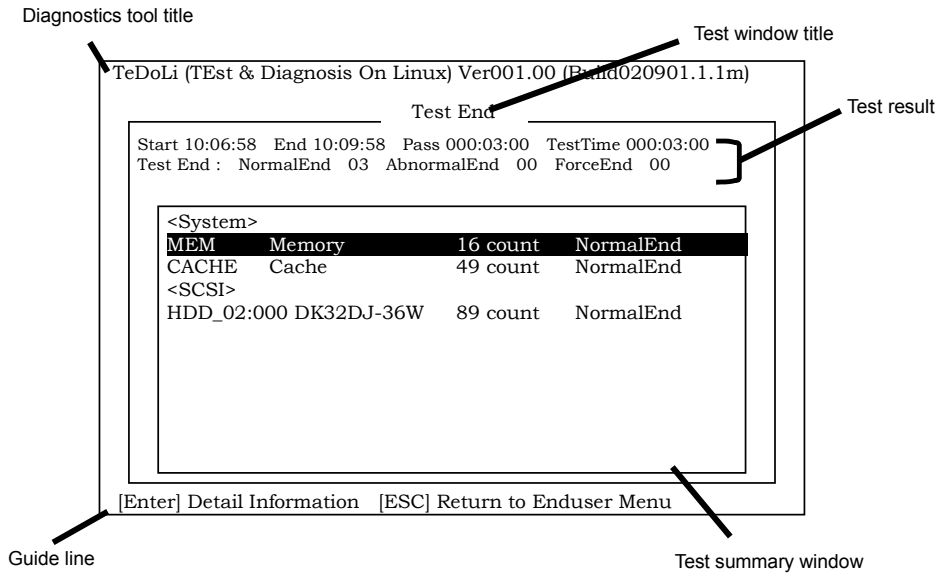
Procedures to start the diagnostics program are as follows:

1. Shutdown the OS, and turn off the CPU blade.
2. Disconnect all the LAN cables from the Blade Enclosure. If the switch module is connected with the Blade Enclosure, remove all the LAN cables from the switch module.
3. Power on the CPU blade.
4. Use the NEC EXPRESSBUILDER DVD to start the system.
5. Select [Tool menu (Normal mode)] when local console of the CPU blade is used for, or select [Tool menu (Redirection mode)] when remote console is used for.

> **NOTE:** If the system displays the [Language selection] menu, select [English].

6. Select [Test and diagnostics].

Select [End-User Mode] and the system diagnostics starts. The diagnostics will be completed in approximately three minutes. When the diagnostics is completed, the screen of the display changes as shown below:


Diagnostics tool title
Test window title
TeDoLi (TEst & Diagnosis On Linux) Ver001.00 (Build020901.1.1m)
Test End
Test result
Start 10:06:58 End 10:09:58 Pass 000:03:00 TestTime 000:03:00
Test End : NormalEnd 03 AbnormalEnd 00 ForceEnd 00
<System>
MEM Memory 16 count NormalEnd
CACHE Cache 49 count NormalEnd
<SCSI>
HDD_02:000 DK32DJ-36W 89 count NormalEnd
[Enter] Detail Information [ESC] Return to Enduser Menu
Guide line
Test summary window

– Diagnostics tool title

  Shows the name and version of the diagnostic tool.

– Test window title

  Shows the progress of the diagnostics. "Test End" is displayed when the diagnostics completes.

– Test result

  Shows the start, end, and elapsed time and completion status of the diagnostics.

– Guide line

  Shows the details of the keys to operate window.

– Test summary window

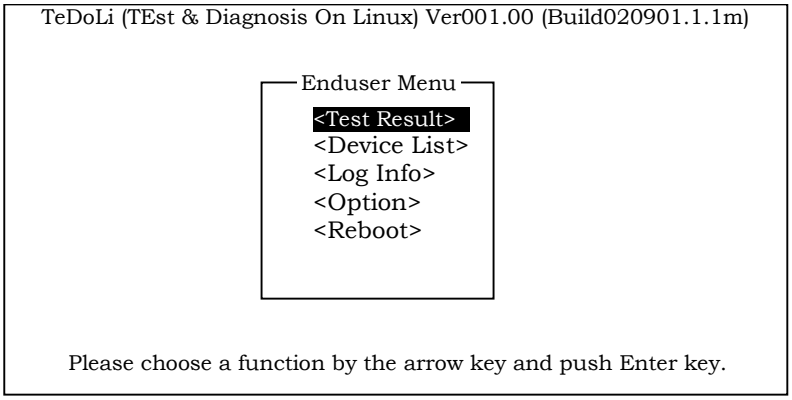
  Shows the results of each test that executed the diagnostics. Move the cursor and press the **Enter** key on the cursor line to display the details of the test.

When an error is detected by the system diagnostics, the relevant test result in the test Summary window is highlighted in red, and "Abnormal End" is displayed in the result on the right side.

Move the cursor to the test that detected the error, and press the **Enter** key. Record the error message that has been output to the Detail Information screen and contact your service representative.

7. Follow the guide line shown at the bottom of the screen, and press the **Esc** key.

   The [Enduser Menu] below is displayed.



<Test Result> Shows the diagnostics completion screen of the above diagnostics.

<Device List> Shows a list of connected devices.

<Log Info> Shows the log information of the diagnostics. It can be saved on a floppy disk.
To save it on a floppy disk, insert a formatted floppy disk to the floppy disk drive, and select <Save(F)>.

<Option> Optional features can be used from this menu.

<Reboot> Reboots the system.

8. Select <Reboot> in the [Enduser Menu] above.

   The CPU blade restarts and the system is started from the NEC EXPRESSBUILDER.

9. Exit the NEC EXPRESSBUILDER, and remove the DVD from the optical disk drive.

10. Power off the CPU blade.

11. Reconnect all the LAN cables that have been disconnected in Step 2.

This completes the system diagnostics.

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Chapter 8

Troubleshooting

If your CPU blade does not operate as expected, read this chapter before assuming a failure.

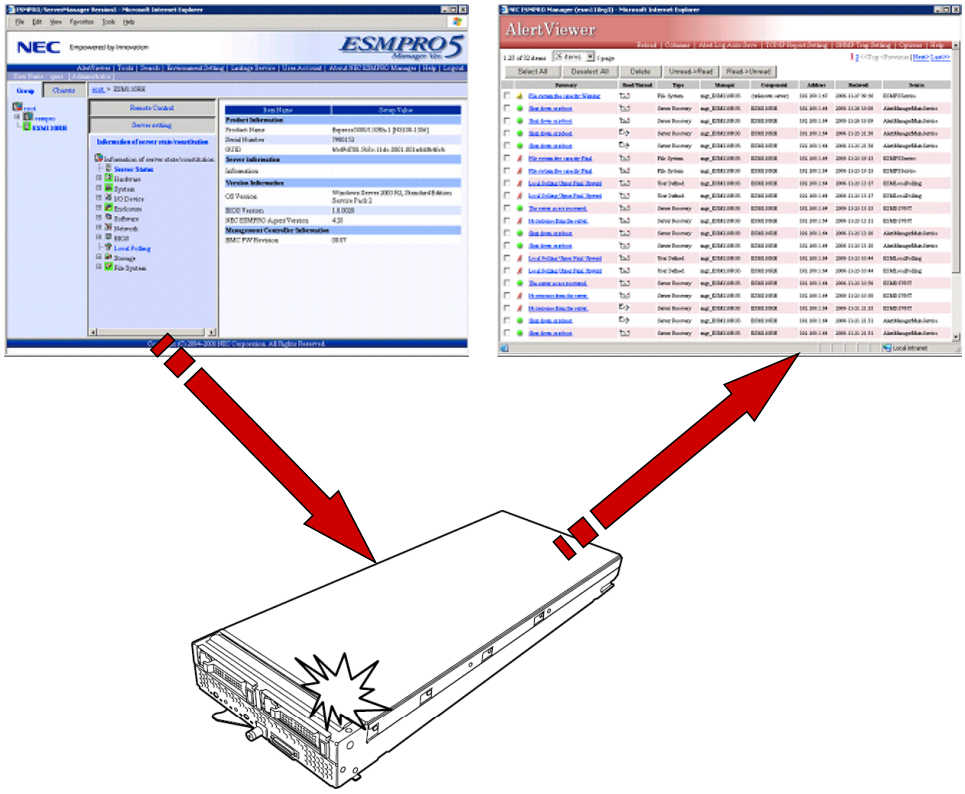
> **NOTE:** For provision against an unexpected failure, it is recommended to install NEC ESMPRO to your computer.

SYSTEM VIEWERS

Monitor the occurrence of fault by NEC ESMPRO during the system operation.

Especially take note on whether any alert is reported to NEC ESMPRO Manager. Check whether any alert is reported on NEC ESMPRO Manager.

[Example]



ERROR MESSAGES

If an error occurs in the CPU blade, an error message appears on the display unit connected to the CPU blade.

POST Error Messages

Powering on the CPU blade automatically starts the self-diagnostic program, POST (Power On Self-Test). When the POST detects any error, it displays an error message and its measure on the display unit.

Follow the table below to troubleshoot such errors.

> **IMPORTANT:** Take a note on the messages displayed before consulting with your service representative. Alarm messages are useful information for maintenance.

On-screen error message		Action
0200	Failure Fixed Disk	Contact your service representative.
0230	System RAM Failed at offset	
0231	Shadow RAM Failed at offset	
0232	Extend RAM Failed at address line	
0234	Single-bit ECC error	
0235	Multiple-bit ECC error	
0250	System battery is dead Replace and run SETUP	Contact your service representative to replace the battery. (Restart the system, and then run the BIOS SETUP utility to correct the setting.)
0251	System CMOS checksum bad Default configuration used	Default configuration is used. Restart the system, and then run the BIOS SETUP utility to correct the setting.
0260	System timer error	Contact your service representative.
0270	Real timer error	
0271	Check date and time setting	Run the BIOS SETUP utility to set the date and time. If the error persists, contact your service representative.
02D0	System cache error Cache disabled	Contact your service representative.
0B1B	PCI System Error on Bus/Device/Function	
0B1C	PCI Parity Error on Bus/Device/Function	
0B28	Unsupported Processor detected on Processor 1	
0B29	Unsupported Processor detected on Processor 2	
0B50	Processor #1 with error taken offline	
0B51	Processor #2 with error taken offline	
0B5F	Forced to use Processor with error	

On-screen error message		Action
0B60	DIMM group #1 has been disabled	Contact your service representative.
0B61	DIMM group #2 has been disabled	
0B62	DIMM group #3 has been disabled	
0B63	DIMM group #4 has been disabled	
0B64	DIMM group #5 has been disabled	
0B65	DIMM group #6 has been disabled	
0B66	DIMM group #7 has been disabled	
0B67	DIMM group #8 has been disabled	
0B70	The error occurred during temperature sensor reading	Contact your service representative.
0B71	System Temperature out of the range	The fan may be faulty, or dusts are clogged in fan. Contact your service representative for maintenance.
0B74	The error occurred during voltage sensor reading	Contact your service representative.
0B75	System Voltage out of the range	
0B78	The error occurred during fan sensor reading	
0B7C	The error occurred during redundant power module confirmation	
0B80	BMC Memory Test Failed.	Power off and reboot the CPU blade. If the error persists, contact your service representative.
0B81	BMC Firmware Code Area CRC check failed.	
0B82	BMC core hardware failure.	
0B83	BMC IBF or OBF check failed.	
0B8A	BMC SEL area full.	Run SETUP and select [Server] - [Event Log Configuration] - [Clear All Error Logs] to clear error logs.
0B8B	BMC progress check timeout	Power off and reboot the CPU blade. If the error persists, contact your service representative.
0B8C	BMC command access failed.	
0B8D	Could not redirect the console - BMC Busy -	
0B8E	Could not redirect the console - BMC Error -	
0B8F	Could not redirect the console - BMC Parameter Error -	
0B90	BMC Platform information Area Corrupted.	
0B91	BMC update firmware corrupted.	
0B92	Internal Use Area of BMC FRU corrupted	FRU command and EMP feature are unavailable. This is not a fatal error, however, power-off and reboot the CPU blade. If the error persists, contact your service representative.
0B93	BMC SDR Repository empty.	Power off and reboot the CPU blade. If the error persists, contact your service representative.
0B94	IPMB signal lines do not respond.	Access to SMC via IPMB is unavailable. This is not a fatal error, however, power-off and reboot the CPU blade. If the error persists, contact your service representative.

On-screen error message	Action
0B95 BMC FRU device failure.	FRU command and EMP feature are unavailable. This is not a fatal error, however, power-off and reboot the CPU blade. If the error persists, contact your service representative.
0B96 BMC SDR Repository failure.	Power off and reboot the CPU blade. If the error persists, contact your service representative.
0B97 BMC SEL device failure.	
0B98 BMC RAM test error	
0B99 BMC Fatal hardware error.	
0B9A Management controller not responding	
0B9B Private I2C bus not responding.	
0B9C BMC internal exception	
0B9D BMC A/D timeout error.	
0B9E SDR repository corrupt.	
0B9F SEL corrupt.	
0BB0 SMBIOS - SROM data read error.	
0BB1 SMBIOS - SROM data checksum bad.	
0BD0 1st SMBus device address not acknowledged.	
0BD1 1st SMBus device Error detected.	
0BD2 1st SMBus timeout.	
0BD3 2nd SMBus device address not acknowledged.	
0BD4 2nd SMBus device Error detected.	
0BD5 2nd SMBus timeout.	
0BD3 3rd SMBus device address not acknowledged.	
0BD4 3rd SMBus device Error detected.	
0BD5 3rd SMBus timeout.	
0BD9 4th SMBus device address not acknowledged.	
0BDA 4th SMBus device Error detected.	
0BDB 4th SMBus timeout.	
0BDC 5th SMBus device address not acknowledged.	
0BDD 5th SMBus device Error detected.	
0BDE 5th SMBus timeout.	
0BE8 IPMB device address not acknowledged.	
0BE9 IPMB device Error detected.	
0BEA IPMB timeout.	
8100 Memory decreased in Size	Contact your service representative.

On-screen error message	Action
8450 Can't Read FRU on CPU Unit Type I Mezzanine	Power off and reboot the CPU blade. Also make sure the mezzanine card is correctly installed in Type I mezzanine card slot. If the error persists, contact your service representative.
8451 Can't Read FRU on CPU Unit Type II Mezzanine	Power off and reboot the CPU blade. Also make sure the mezzanine card is correctly installed in Type II mezzanine card slot. If the error persists, contact your service representative.
Expansion Rom not initialize	Run the BIOS SETUP utility to disable the use of expansion ROM area and PCI slot OptionROM. If the error persists, contact your service representative.
Invalid System Configuration Data	Contact your service representative.
Resource Conflict	
System Configuration Data Read error	
System Configuration Data Write error	
WARNING: IRQ not configured	

IMPORTANT: The message "Expansion Rom not initialized" may be displayed due to insufficient expansion ROM area. Select one of the features of the lowest frequency and set it to "Disabled".
– On board LAN 1/On board LAN 2
– PCI slot 1

LAMPS

The CPU blade includes lamps to indicate the CPU blade states by a variety of colors and display patterns on the front panel, hard disk drive, and power supply.

See "Indications of STATUS lamp, their meanings and actions against the indications" in Chapter 2 for details.

SOLVING PROBLEMS

When the CPU blade fails to operate as expected, see the following to find out your problem and follow the instruction given before asking for repair.

If the CPU blade still fails to operate successfully after solving your problem, take a note on the on-screen message and contact your service representative.

CPU Blade

Fail to power-on:

- ❑ Is the proper power supplied to the system?

  → Make sure that the power cord is connected to an AC outlet (or UPS) meeting the power standard of the Blade Enclosure.

  → Use the power cord shipped with the Blade Enclosure. In addition, make sure that the outer cover of the power cord is not broken and the cord at the plug is not bent.

  → Make sure that the breaker of the connected outlet is set to ON.

  → If the power cord is connect to the UPS, make sure that the power of the UPS is set to ON and proper power is output from the UPS. Refer to the manual shipped with the UPS for details.

  → Make sure that the CPU blade is installed correctly.

  The CPU blade BIOS SETUP utility allows you to set the feature for power link with the UPS.

  <Menus to check: [AC-LINK] in [Server] menu>

- ❑ Does the Blade Enclosure contain the required number of power units?

  → Refer to the User's Guide of Blade Enclosure for the required number of power units.

- ❑ Has the EM card been initialized?

  → If the EM card is not initialized, the power unit does not supply the power to the CPU blade.

- ❑ Does the Blade Enclosure contain the required number of fans in proper location?

  → Refer to the User's Guide of Blade Enclosure for the required number of fans and their installation locations.

- ❑ Have the CPU blade (containing mezzanine card) and switch modules been installed in proper position?

  → Refer to the User's Guide of Blade Enclosure for proper installation locations.

- ❑ Did you turn on the power of Blade Enclosure within 30 seconds after AC power is supplied to each power unit?

  → Initialization of BMC takes about 30 seconds after AC power is supplied to the CPU blade. After making sure that the AC power is supplied to the CPU blade (the POWER lamp lit amber), wait for about 30 seconds or longer, then turn on the power of Blade Enclosure by using the POWER switch.

- ❑ Immediately after the power is supplied to the CPU blade, the CPU blade in the slot having the larger number is delayed.

  → Initialization of BMC is performed for about 30 seconds after power-on of CPU blade. After that, the CPU blades are powered on sequentially. At power-on sequence, a waiting time {(slot number - 1) × 2 seconds} is inserted between blades. Accordingly, the CPU blade in the slot having the larger number is delayed.

- ❑ It occasionally takes time from power-on operation to CPU blade to turning on the power supply.

  → When power-on operation is executed, the CPU blade notifies the EM card of it, and wait for permission. If the EM card is processing other task and it is busy, permission for power-on is delayed.

The remote power-on through network does not work (Wake On LAN does not work):

- ❑ Is the system shut down forcibly?

  → After the forced shutdown (or pressing the POWER switch on the CPU blade brings the power of the CPU blade to be turned off forcibly), Wake On LAN does not work. After starting the CPU blade once, perform the normal shutdown processing.

Fail to power-off:

- ❑ Is the POWER switch function disabled?

  → Restart the CPU blade once and then start the BIOS SETUP utility.

  <Menus to check: [Security] – [Power Switch Inhibit]>

POST fails to complete:

- ❑ Is memory installed properly?

  → POST does not operate if DIMM is not installed properly.

- ❑ Are memory devices of large capacity installed?

  → Depending on the installed memory size, it takes much time to check the memory. Wait for a while.

- ❑ Is the keyboard or mouse manipulated just after starting a CPU blade?

  → If you manipulate the keyboard or mouse just after POST is started, POST may detect an error of the keyboard controller by mistake to halt the processing. If this occurs, start POST again. Just after restarting POST, do not perform any operation by using the keyboard or mouse until the BIOS start message appears.

- ❑ Are memory and PCI devices available for CPU blades installed?

  → NEC cannot secure the operation of any device other than those approved by NEC.

"System Configuration Data Read Error" appears and POST pauses:

- ❑ Did you perform any of the following operation?
  - Pressed the POWER switch of the CPU blade to forcedly power off the CPU blade.
  - Pressed the RESET switch of the CPU blade to provide hardware reset.
  - Removed the CPU blade from the Blade Enclosure.
  - Disconnected the power cord from the Blade Enclosure.

  → Contact your service representative.

The MAC address of the onboard LAN of the CPU blade is unknown:

→ You can find the MAC address by the label put near the MP connector on the CPU blade. In addition, you can see the address from Windows or Linux command. See Chapter 3 for details.

Fail to access to internal or external devices (or such devices fail to operate):

- ❑ Are cables properly connected?

  → Make sure that the interface cables and power cord are properly connected. Also make sure that the cables are connected in the correct order.

- ❑ Is the power-on order correct?

  → When the CPU blade has any external devices connected, power on the external devices first, then the CPU blade.

- ❑ Did you install drivers for connected optional devices?

  → Some optional devices require specific device drivers. Refer to the manual that comes with the device to install its driver.

- ❑ Is BIOS configuration correct?

  → When the CPU blade has PCI devices connected, make sure to set the PCI device interrupt and others with the BIOS SETUP utility of the CPU blade. (Most PCI devices generally do not require any change to the configuration, but some boards do require specific settings. Refer to the manual that comes with the board for details to make correct settings.

  <Menus to check: [Advanced] – [PCI Device] – [PCI IRQ xx] x: PCI slot number, [Advanced] – [PCI Configuration] – [PCI Slot 1 Option ROM]>

  → Some devices connected to the serial or USB port may require I/O port address or operation mode settings. Refer to the manual that comes with the board for details to make correct settings.

  <Menu to check: [Advanced] – [Peripheral Configuration], [Server] – [Console Redirection]>

The keyboard or mouse fails to operate:

- ❑ Is BIOS configuration correct?

  → The keyboard and mouse may be disabled with the BIOS SETUP utility of the CPU blade. Check the settings with the BIOS SETUP utility.

  <Menus to check: [Advanced] – [Peripheral Configuration], [Advanced] – [NumLock]>

- ❑ Did you install drivers for keyboard and mouse?

  → Refer to the manual that comes with your OS to check that the keyboard and mouse drivers are installed. (These drivers are installed along with the OS.) Some OS's allow you to change the keyboard and mouse settings. Refer to manual that comes with your OS to check that the keyboard and mouse settings are correct.

- ❑ Is the system used in the status that Windows Server 2003 and Linux are not started?

  → In the following states with the use of USB keyboard and USB floppy disk drive, conduct key entries when the access lamp on the USB floppy disk drive is off (or the floppy disk is not accessed).

  – Press **F6**, **S**, and **Enter** in installation by using the Windows Setup Disk.

  – Start of ROM-DOS Startup FD for command input

Fail to access the hard disk drive:
(Refer to the documentation provided with the disk array controller for the hard disk drive in disk array configuration.)

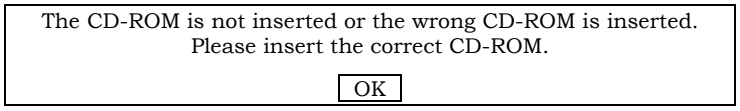
- ❑ Is the hard disk drive applicable to the CPU blade?

  → Operation of any device that is not authorized by NEC is not guaranteed.

- ❑ Is the hard disk drive properly installed?

  → Securely insert the drive carrier into the Blade Enclosure and lock it with the lever. The hard disk drive is not connected to the internal connector when it is not completely installed (see Chapter 3).

Inserted the correct CD-ROM but the message like the following is displayed:



- ❑ Is the data side of the CD-ROM dirty or damaged?

  → Take the CD-ROM out of the DVD-ROM drive, confirm that it is not dirty or damaged, reset and click [OK].

Fail to access to the DVD/CD-ROM:

- ❑ Is the DVD/CD-ROM properly set in the DVD-ROM drive tray?

  → Take the disc out of the tray, and set the disc with its label side upward.

- ❑ Is the DVD/CD-ROM applicable to the server?

  → The DVD/CD-ROM for Macintosh is not available for use.

  → For the disk which does not conform to the CD standard, the playback of such a disk with the DVD drive is not guaranteed.

Fail to start the OS:

- ❑ Is the BIOS configuration correct?

  → Run the BIOS SETUP utility to change the boot order (see Chapter 4).

- ❑ Is a floppy disk in the floppy disk drive?

  → Take out the floppy disk and restart the CPU blade.

- ❑ Is the OS broken?

  → Use recovery process to recover the system.

The CPU blade is not found on the network:

- ❑ Is the LAN cable connected?

  → Make sure to connect the LAN cable to the network port on the rear of the CPU blade. Also make sure that the LAN cable to use conforms to the network interface standard.

- ❑ Is BIOS configuration correct?

  → The internal LAN controller may be disabled with the BIOS SETUP utility of the CPU blade. Check the setting with the BIOS SETUP utility.

  <Menus to check:

  [Advanced] – [PCI Configuration] – [Embedded NIC (Dual Gbit)] – [LAN #1 Option ROM Scan], [LAN #2 Option ROM Scan]>

- ❑ Have the protocol and service already configured?

  → Install the distinctive network driver for the CPU blade. Make sure that the protocol, such as TCP/IP, and services are properly specified.

- ❑ Is the transfer speed correct?

  → Open the network property dialog box in control panel to specify the "Link Speed & Duplex" value the same as the value specified for HUB.

Problems with Windows

The following system events are logged when Windows Server 2008 is installed.

Event ID: 134
Source: Microsoft-Windows-Time-Service
Level: Warning
Description: NtpClient was unable to set a manual peer to use as a time source because of DNS resolution error on 'time.windows.com,0x9'. NtpClient will try again in 15 minutes and double the reattempt interval thereafter. The error was: No such host is known. (0x80072AF9)

Event ID: 263
Source: PlugPlayManager
Level: Warning
Description: The service 'ShellHWDetection' may not have unregistered for device event notifications before it was stopped.

Event ID: 7000
Source: Service Control Manager
Level: Error
Description: The Parallel port driver service failed to start due to the following error: The service cannot be started, either because it is disabled or because it has no enabled devices associated with it.

Event ID: 15016
Source: Microsoft-Windows-Http
Level: Error
Description: Unable to initialize the security package Kerberos for server side authentication. The data field contains the error number.

→ These events do not affect system operation. Ignore these messages.

The following application events are logged when Windows Server 2008 is installed.

Event ID: 63
Source: Microsoft-Windows-WMI
Level: Warning
Description: A provider, Ncs2, has been registered in the Windows Management Instrumentation namespace Root\cimv2 to use the LocalSystem account.
This account is privileged and the provider may cause a security violation if it does not correctly impersonate user requests.

A provider, IntelEthernetDiag, has been registered in the Windows Management Instrumentation namespace Root\CIMv2 to use the LocalSystem account. This account is privileged and the provider may cause a security violation if it does not correctly impersonate user requests.

A provider, WmiPerfClass, has been registered in the Windows Management Instrumentation namespace root\cimv2 to use the LocalSystem account. This account is privileged and the provider may cause a security violation if it does not correctly impersonate user requests.

→ These events do not affect system operation. Ignore these messages.

The following errors or warnings are logged when I start the system.

Event ID: 11
Source: IANSMiniport
Level: Warning
Description: Adapter link down: Intel® ~

Event ID: 13
Source: IANSMiniport
Level: Warning
Description: Intel®~ has been deactivated from the team.

Event ID: 16
Source: IANSMiniport
Level: Warning
Description: [Team Name]: The last adapter has lost link. Team network connection has been lost.

→ If you have created a team of network adapters, the above events may be logged when you start the system. These events do not affect the LAN driver operation.

Ignore these messages.

The following system event is logged when Windows Server 2008 is installed.

Event ID: 10

Source: VDS Dynamic Provider

Description: The provider failed while storing notifications from the driver.

The Virtual Disk Service should be restarted. hr=80042505

→ Go to the Microsoft website:
http://support.microsoft.com/kb/948275/en-us/

The following application events are logged when Windows Server 2008 is installed.

Event ID: 1021

Source: Microsoft-Windows-Security-Licensing-SLC

Level: Warning

Description: SLUINotify service has failed to start. hr=0x80070424

Event ID: 1534

Source: Microsoft-Windows-User Profiles Service

Level: Warning

Description: Profile notification of event Create for component {56EA1054-1959-467f-BE3B-A2A787C4B6EA} failed, error code is -2147023591.

→ These events do not affect system operation. Ignore these messages.

There are some cases that an event log is registered as follows when you install Windows Server 2003 x64 Editions.

Source: DCOM

Category: Error

Event ID: 10016

Description: The application-specific permission settings do not grant Local Activation permission for the COM server application with CLSID {555F3418-D99E-4E51-800A-6E89CFD8B1D7} to the user{NT AUTHORITY\LOCAL SERVICE} SID {S-1-5-19}.
This security permission can be modified using the Component Services administrative tool.

→ It is not a problem in operating the system.

There are some cases that an event log is registered as follows when you install Windows Server 2003 x64 Editions.

Event Source: Service Control Manager

Event Type: Error

Event ID: 7011

Description: Timeout (30000 milliseconds) waiting for a transaction response from the Dfs service.

→ When this event is not registered by rebooting the system, it is not a problem in operating the system.

Fail to access to USB devices on Windows Server 2003 x64 Edition or Windows Server 2003.

❑ Did you apply [Hotfix for Windows x64 "KB921411"] or [Hotfix for Windows Server 2003 (KB921411)] prior to the "Updating the System" process?
Specify whether "!" is displayed or not on the USB root hub.

<verification process>

Click Start menu, right-click [My Computer], and click [Manage] to start Computer Management. Then, select [Device Manager] from the left side window.

→ If "!" is displayed on the USB root hub, apply the Hotfix according to the "Recovery process".
"Recovery process" refer to Appendix B for details.

Fail to restart the system with the message means "pci.sys missing or corrupt" after you executed "Updating the System" process to Windows Server 2003 x64 Edition or Windows Server 2003.

❑ During the application of the ChipSet driver by "Updating the System" process, the driver for the USB device may be deleted.

Follow the process detailed below.

(1) Start the Recovery console.

(2) Copy "<Systemdrive>\system32\dllcache\pci.sys" to under "<Systemdrive>\system32\drivers".

(3) Exit the Recovery console, and restart the system.

(4) Refer to "Recovery process" and follow to the process detailed to apply [Hotfix for Windows x64 "KB921411"] or [Hotfix for Windows Server 2003 (KB921411)] and "Updating the System".
"Recovery process" refer to Appendix B for details.

There are some cases that an event log is registered as follows when you operate Windows Server 2003 R2.

Source: IPMIDRV

Type: Error

Event ID: 1001

Description: The IPMI device driver attempted to determine if the system supported an IPMI BMC device. The driver attempted to detect the presence of the IPMI BMC by searching the SMBIOS for Type 38 record. But either no record was found or the record was not compatible with the version of the device driver. If a SMBIOS Type 38 record was detected, the Dump Data field of the event contains a binary representation of the record.

→ If you use "Hardware Management" which is provided by Windows Server 2003 R2, above-shown event log will be registered.

For more details, refer to "Enabling Microsoft Windows Server 2003 R2 Hardware Management" on the following site.

[NEC Express5800 Web Site]
http://www.nec.co.jp/express/download/W2K3_R2

The system time lags:

→ If you do not use the server that adjust time such as NTP (Network Time Protocol) Server, the system time may differ from actual time. In this case, use NTP server or disable "Windows Time Service".

Fail to start the OS with the /3GB switch:

→ System often fails to start the OS with the /3GB switch.

In this case, please adjust the capacity of the user mode area using the /userva switch in reference to the following URL.

http://support.microsoft.com/kb/316739/en

Problems with NEC EXPRESSBUILDER

When the CPU blade is not booted from the NEC EXPRESSBUILDER DVD, check the following:

- ❑ Did you set the NEC EXPRESSBUILDER during POST and restart the CPU blade?

  → If you do not set the NEC EXPRESSBUILDER during POST and restart the CPU blade, an error message will appear or the OS will boot.

- ❑ Is BIOS configuration correct?

  → The boot device order may be specified with the BIOS setup utility of the CPU blade. Use the BIOS setup utility to change the boot device order to boot the system from the DVD-ROM drive first.

  <Menu to check: [Boot]>

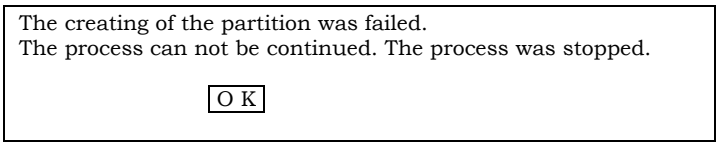
- ❑ If [Os installation ***default***] is selected at Boot selection screen, following message is displayed.

  After this message appears, check the error and take the appropriate corrective action according to the message listed in the table below.

Message	Cause
This EXPRESSBUILDER version was not designed for this computer. Insert the correct version and click [OK]. (When you click [OK], the computer reboots.)	This NEC EXPRESSBUILDER version is not designed for this server. Execute the NEC EXPRESSBUILDER on the compliant server.
EXPRESSBUILDER could not get the hardware parameters written in this motherboard. This version is not designed for this computer or the motherboard may be broken. (When you click [OK], the computer reboots.)	This message is shown when NEC EXPRESSBUILDER could not find system-specific information because of mother board exchange and so on.
The hardware parameters written in this motherboard are incorrect. This version is not designed for this computer or the motherboard may be broken.	

Problems with Express Setup

Following message appeared when you tried to install Express Setup to the hard disk drive that has smaller capacity than the specified partition size:



→ Cannot continue the setup.

Specify smaller partition size than the capacity of connected hard disk drive, and then retry the setup.

Specified to join the Domain, but the system is installed as Workgroup.

→ When the setup fails to join the Domain during the installation, it will install the system as Workgroup. Open [System] in Control Panel to specify joining the Domain.

Unable to specify the details of Network adapter.

→ In Express Setup, you can not specify the details of Network adapter. Specify them from Control Panel after starting Windows.

There is unused area on the lead of HDD.

❑ Did you install Windows Server 2003?

→ If you had installed Windows Server 2003 by Express Setup, the head 8MB of HDD may be unused area.

It is not a problem in operating the system.

Product key was not asked.

- Case of Windows Server 2008

  → If you install using BackUp DVD-ROM, product key is not required.

  If you install using the DVD-ROM other than BackUp DVD-ROM, product key screen is displayed twice, at "during OS installation" and "before [MICROSOFT SOFTWARE LICENSE TERMS] dialog, which displayed after OS installation".

  Enter product key following the message.

- Case of Windows Server 2003

  → If you install using BackUp CD-ROM, product key is not required.

  If you install using the DVD-ROM other than BackUp DVD-ROM, product key screen is displayed during OS installation.

  Enter ProductKey following the message.

When IIS is installed with Windows Server 2008 by Express Setup, following feature is installed.

- Windows Process Activation Service
  - – Process Model
  - – Configuration APIs
- Remote Server Administration Tool
  - – Role Administration Tools
  - – Web Server (IIS) Tools

  → The feature listed above is activated because they are required for the installation of IIS basic feature.

Following message appeared when you tried to install

Windows Server 2008 by Express Setup using N8403-026 (RAID Controller), N8403-027 (SATA Interface card).

Windows cannot find a system volume that meets requirements for installation

→ See "RAID Configuration (Chapter 4)" to create RAID.

Or, see "Creating new RAID using N8403-026 (RAID Controller), N8403-027 (SATA Interface card) (Chapter 9)" to configure RAID by EXPRESSBUILDER beforehand, and perform Express Setup.

In this case, select [Skip the logical drive creation] at [Enter RAID settings] (Step 4) screen of Express Setup.

Problems with Parameter File Creator

Fail to start Parameter File Creator:

- ❑ Parameter File Creator requires to run by "Microsoft(R) HTML Application host".

  → If Parameter File Creator does not start, associate the file type with "Microsoft(R) HTML Application host" via following process.

  1) Click [Run] on Start menu.
  2) Type "%windir%\system32\mshta.exe /register" in the [Open] box, and click [OK].

Problem with Disk Array Configuration

Refer to the manuals in the NEC EXPRESSBUILDER DVD for any trouble occurred on disk array in this system.

Problems with RAID System and RAID Controller

Physical device is not correctly displayed on Universal RAID Utility:

→ If you use N8403-027 SATA interface card, a part of information on a physical device is not correctly displayed on Universal RAID Utility.
It is no problem.

Cannot enter standby:

→ If you use N8403-027 SATA interface card, system may not enter standby with heavy I/O.

Cannot enter Hibernation:

→ If you use N8403-027 SATA interface card, system may not enter Hibernation with heavy I/O.

Problems with N8403-018 FibreChannel Controller

When N8403-018 is used, the names of the Fibre Channel controllers may appear with different names on Device Manager:

→ It is not a problem in operating the system. A directory that contains the driver software NEC EXPRESSBUILDER DVD is also displayed.

[Windows Server 2008 64-bit (x64) Edition]
<Drive Letter>:\003\win\winnt\oemfd\ws2008x64\fd1\elxstor\friendlyname.exe

[Windows Server 2008 32-bit (x86) Edition]
<Drive Letter>:\003\win\winnt\oemfd\ws2008\fd1\elxstor\friendlyname.exe

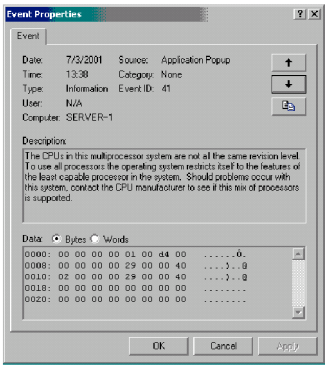
COLLECTING EVENT LOG

This section describes on how to collect the log of various events that occurred on the CPU blade.

IMPORTANT:

- If STOP error, system error, or stall occurred, follow the procedure below after restarting the system.
- Restarting the system due to an error may display a message indicating insufficient virtual memory. Ignore this message and proceed. Restarting the system may result in dumping improper data.

NOTE: The different revision processor may be mixed in additional CPU kit. When Windows is used, following message may appear in the System Log of the Event Viewer after extension the different revision of two or more CPUs in the server. If this message is logged, it is no problem for operation.


Event Properties
Event
Date: 7/3/2001 Source: Application Popup
Time: 13:38 Category: None
Type: Information Event ID: 41
User: N/A
Computer: SERVER-1
Description:
The CPUs in this multiprocessor system are not all the same revision level. To use all processors the operating system restricts itself to the features of the least capable processor in the system. Should problems occur with this system, contact the CPU manufacturer to see if this mix of processors is supported.
Data: Bytes Words
0000: 00 00 00 00 01 00 d4 00 ......Ô.
0008: 00 00 00 00 29 00 00 40 ....)..@
0010: 02 00 00 00 29 00 00 40 ....)..@
0018: 00 00 00 00 00 00 00 00 ....
0020: 00 00 00 00 00 00 00 00 ....
OK
Cancel
Apply

1. Click [Management Tool] – [Event Viewer] from the Control Panel.
2. Select the type of the log to collect.

   On [Application Log], the events related to the running application is archived. On [Security Log], the events related to the security is archived. On [System Log], the events occurred at the item which configures Windows system is archived.
3. Click [Save as...] in the [Run] menu.
4. Enter the file name of archived log in the [File Name] box.
5. Select the type of the log file you want to save in the [File Type] list box and click [OK].

For more information, refer to Windows Online Help.

COLLECTING CONFIGURATION INFORMATION

This section describes on how to collect the information on hardware configuration and internal specification.

In order to collect information, "Diagnostic Program" is used.

> **IMPORTANT:** If STOP error, system error, or stall occurred, follow the procedure below after restarting the system.

1. Point to [Settings] in Start menu, and click [Control Panel].

   The [Control Panel] dialog box appears.

2. Double-click [Management Tool], and double-click [Computer Management].

   The [Computer Management] dialog box appears.

3. Click [System Tool] – [System Information].
4. Click [Save as System Information File] in the [Operation] menu.
5. Enter the file name to save in the [File Name] box.
6. Click [Save].

COLLECTING DR. WATSON DIAGNOSTIC INFORMATION

Dr. Watson collects diagnostic information related to application errors. The location to save the information can be specified as you like. For more information, refer to Chapter 5.

MEMORY DUMP

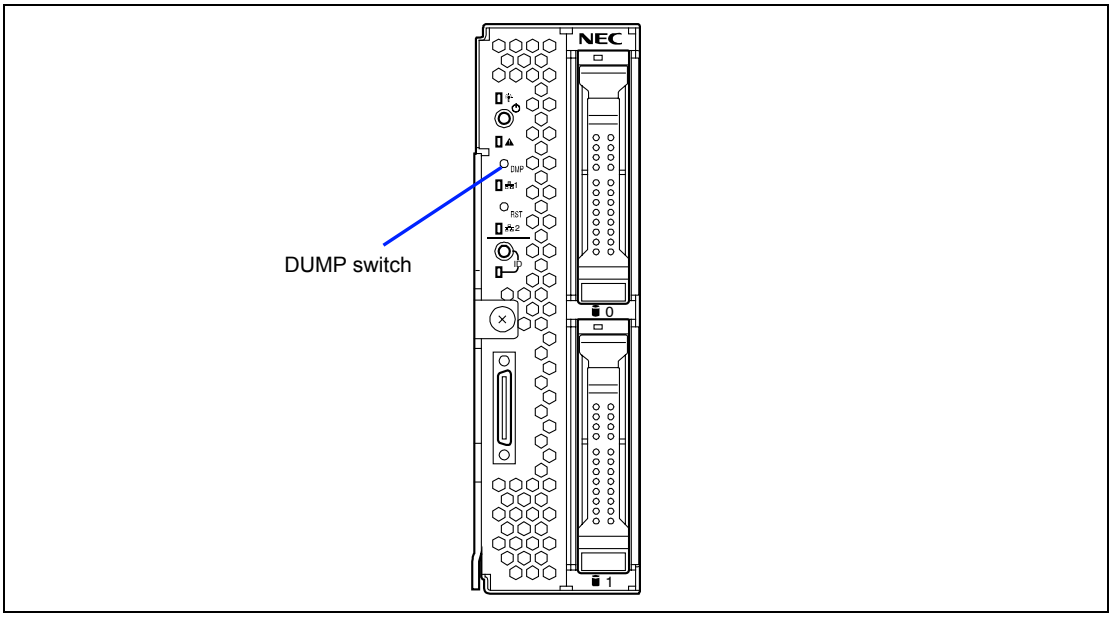
If an error occurs, the dump file should be saved to acquire necessary information.

If you saved the dump to DAT, write down that it is saved as "NTBackup" or "ARCServe" on the label. You can specify the location to save the diagnostic information as you like. For more information, see Chapter 5 for detail.

IMPORTANT:

- Consult with your service representative before dumping the memory. Dumping the memory while the CPU blade is in the successful operation may affect the system operation.
- Restarting the system due to an error may display a message indicating insufficient virtual memory. Ignore this message and proceed. Restarting the system may result in dumping improper data.
- Dumping memory is not available in Linux operating system.

Press the DUMP switch to save the dump file when an error occurs. Insert a metal pin (a straightened large paper clip will make a substitute) into the switch hole to press the DUMP switch.



Pressing the DUMP switch saves the dump file in the specified directory. (Memory dumping may not be available when the CPU stalls.)

RECOVERY FOR Windows SYSTEM

If any file necessary for running the OS is damaged, use the following procedures to recover the system.

IMPORTANT:

- Make sure that the keyboard, display unit, DVD-ROM drive, and floppy disk drive are connected to the CPU blade.
- After recovering the system, see "Updating the System" in Chapter 5 and be sure to update the system.
  Also, you need to update all the drivers after the system update. For more information, see "Installing and Setting Device Drivers" in Chapter 5.
- If the hard disk drive can not be recognized, you can not recover the system.
- Make keyboard entry only while the USB floppy disk drive is not accessed (the access lamp is being off).

For Windows Server 2008

If the system fails to start for some reason, rebuild the system using the recovery console. Note that this method is recommended for only users and administrators who have a thorough knowledge of the recovery console.

For more information, refer to Online Help.

For Windows Server 2003 x64 Editions

If the system fails to start for some reason, rebuild the system using the recovery console. Note that this method is recommended for only users and administrators who have a thorough knowledge of the recovery console.

For more information, refer to Online Help.

For Windows Server 2003

If the system fails to start for some reason, rebuild the system using the recovery console. Note that this method is recommended for only users and administrators who have a thorough knowledge of the recovery console.

For more information, refer to Online Help.

MAINTENANCE TOOLS

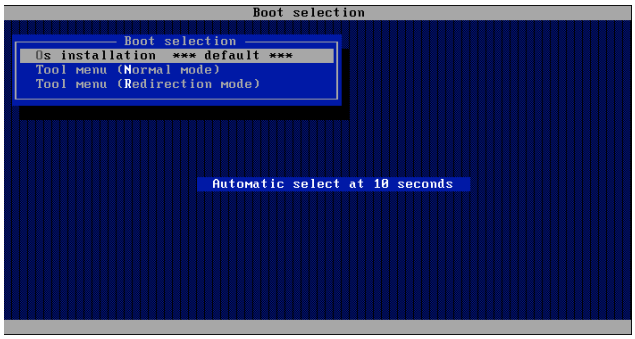
The Maintenance Tools is a tool of this product prevention to maintain, and to analyze the trouble.

Starting Maintenance Tools

The Maintenance Tools is started according to the following procedure.

1. Turn on peripheral devices and the server in this order.
2. Insert the NEC EXPRESSBUILDER DVD supplied with your server into the optical disk drive of your server.
3. Press **Ctrl**, **Alt**, and **Delete** to reboot the server from the NEC EXPRESSBUILDER. (You may also turn off and then on again to reboot the server.)

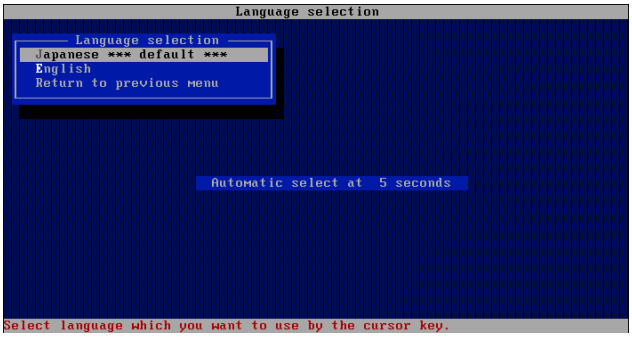
   System boots up displaying Boot selection menu.



IMPORTANT: An initial selection of the menu is "Os installation". "Os installation" starts by the automatic after the Boot selection menu is displayed.

4. When a local console is used, "Tool menu (Normal mode)" is selected.

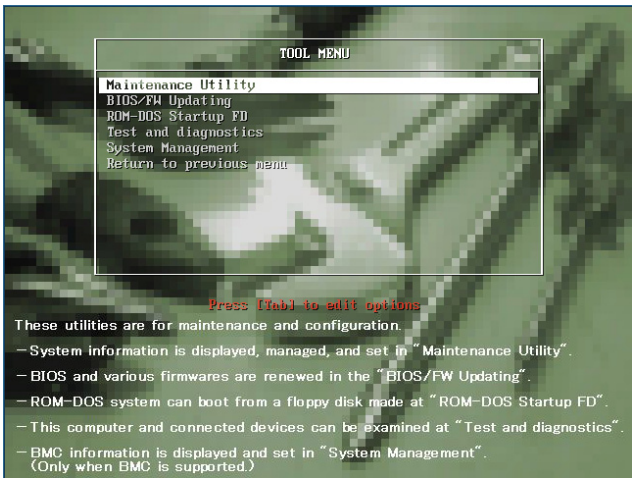
   Moreover, "Tool menu (Redirection mode)" is selected when using it with remote console.


Language selection
Language selection
Japanese *** default ***
English
Return to previous menu
Automatic select at 5 seconds
Select language which you want to use by the cursor key.

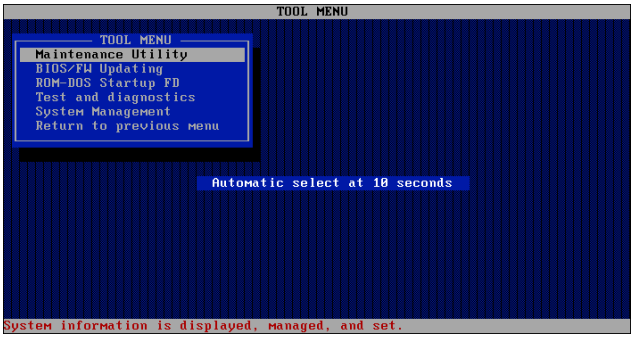
IMPORTANT: An initial selection of the menu is "Japanese". "Japanese" starts by the automatic operation when the operation is not done for five seconds after the Language Selection menu is displayed.

5. "English" is selected.

The tool menu is displayed.


TOOL MENU
Maintenance Utility
BIOS/FW Updating
ROM-DOS Startup FD
Test and diagnostics
System Management
Return to previous menu
Press [Tab] to edit options
These utilities are for maintenance and configuration.
－System information is displayed, managed, and set in "Maintenance Utility".
－BIOS and various firmwares are renewed in the "BIOS/FW Updating".
－ROM-DOS system can boot from a floppy disk made at "ROM-DOS Startup FD".
－This computer and connected devices can be examined at "Test and diagnostics".
－BMC information is displayed and set in "System Management".
(Only when BMC is supported.)

When you use a local console



When you use a remote console

6. Each tool is selected, and it starts.

Function of Maintenance Tools

The following functions can be executed in the Maintenance Tools.

- Maintenance Utility

  The Off-line Maintenance Utility is started in Maintenance Utility. The Off-line Maintenance Utility is an OS-independent maintenance program. When you are unable to start the OS-dependent NEC ESMPRO to troubleshoot a problem, the Off-line Maintenance Utility can be used.

  IMPORTANT:

  - The Off-line Maintenance Utility is intended for use of your service representative. The NEC EXPRESSBUILDER DVD you have created contain a file that describes operation of the utility, but do not attempt to use the utility by yourself. Contact your service representative and follow instructions.
  - See the on-line help for details of the Off-line Maintenance Utility. For further information, ask your service representative.

  The Off-line Maintenance Utility provides the following features.

  – IPMI Information Viewer

    Provides the functions to view the system event log (SEL), sensor data record (SDR), and filed replaceable unit (FRU) and to make a backup copy of them.

    Using this feature, you can find system errors and events to determine a maintenance part.

  – BIOS Setup Viewer

    Provides the functions to export the current configuration data defined with the SETUP utility to a text file.

  – System Information Viewer

    Provides the functions to view information on the processor and the BIOS and export it to a text file.

  – System Information Management

    Provides the function to make a back-up copy of your data.

    Without the backup data, the system-specific information and/or configuration may not be restored.

    Only the authorized personnel is allowed to restore the backup data.

  – System Management

    The parameters of BMC (Baseboard Management Controller) are set for remote control and alert.

- BIOS/FW Updating

  This menu allows you to update the software module such as BIOS and firmware of the server by using the update disk (3.5-inch floppy disk) that is distributed from NEC customer service representative.

  After rebooting the system, an update program is started automatically from floppy disk, and the various BIOS and firmware programs are updated.

  IMPORTANT: Do not turn off the server while the update program is running. If the update processing is discontinued, the system becomes unable to start.

- ROM-DOS startup FD

  Creates a support disk for starting the ROM-DOS system.

- Test and diagnostics

  Execute various tests on the server system to check if the server functions are normal and if the connection between the server and additional board is normal.

  After the Test and diagnostics is executed, a system check program assigned to each model starts. See Chapter 7 for details.

- System Management

  The parameters of BMC (Baseboard Management Controller) are set for remote control and alert.

  This menu's function is the same as the "System Management" of the "Maintenance Utility".

Maintenance Tools with Remote Console

This subsection describes the procedures for using Maintenance Tools with remote console.

Maintenance Tools contains the remote console feature that allows the system administrator to set up the server from the management workstation (management PC) via the network or the server's COM B (serial) port.

IMPORTANT:

- Do not use this feature on any other computer than the server, or on any other server obtained without the NEC EXPRESSBUILDER. Doing so may cause a failure of the server.
- Be sure to select [Tool menu (Redirection mode)] in [Boot selection] menu from the remote console.

Starting

The following two methods are available to start the server.

- Running Maintenance Tools from the management PC via LAN
- Running Maintenance Tools from the management PC via direct connection (COM B)

For the procedure for starting Maintenance Tools with Remote Console, refer to the online document of NEC ESMPRO Manager.

IMPORTANT:

- Do not change the boot device order in BOOT menu in BIOS SETUP. NEC EXPRESSBUILDER cannot be used if the DVD-ROM drive is not the first device to launch the system.
- Use the standard LAN port for LAN connection.
- Use the serial port B for direct connection.
- To use this feature, you need to create a configuration file (3.5-inch floppy disk) that includes communication method between the server and the management PC, and various setup parameters. Use NEC ESMPRO BMC Configuration or NEC ESMPRO Agent Extension or run "System Management" menu from NEC EXPRESSBUILDER to create a configuration file. Save the configuration file into the root directory of the floppy disk as the following file name.

  – File name: CSL_LESS.cfg
- If you exit the BIOS SETUP by unusual way (e.g., forced power-off or reset), the redirection process may fail. In such a case, setup again by using the configuration file.

NOTE: The following items of BIOS setup information will be set as shown below.

- LAN Controller: [Enabled]
- Serial Port A: [Enabled]
  Base I/O Address: [3F8]
  Interrupt: [IRQ 4]
- Serial Port B: [Enabled]
  Base I/O Address: [2F8]
  Interrupt: [IRQ 3]
- BIOS Redirection Port: [Serial Port B]
- Baud Rate: [19.2K]
- Flow Control: [CTS/RTS]
- Console Type: [PC ANSI]

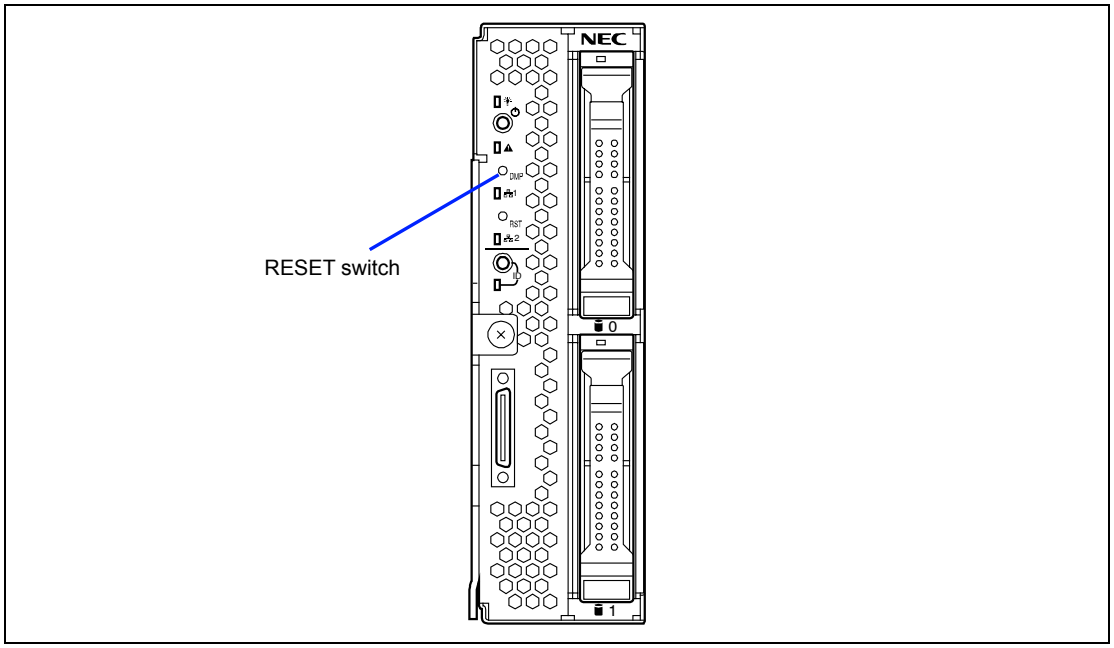
RESETTING THE CPU BLADE

This section describes how to reset the CPU blade when the CPU blade halts or when you want to restore the factory-set BIOS configuration.

> **IMPORTANT:** Resetting the CPU blade clears the DIMM memory and the data in process. To reset the CPU blade when it is not frozen, make sure that no processing is in progress.

- Hardware reset

  Press the RESET switch on the CPU blade. This restarts the CPU blade.



- Software reset

  If the CPU blade halts before starting the OS, press and hold **Ctrl** and **Alt** and press **Delete**. This restarts the CPU blade.

- Remote control reset

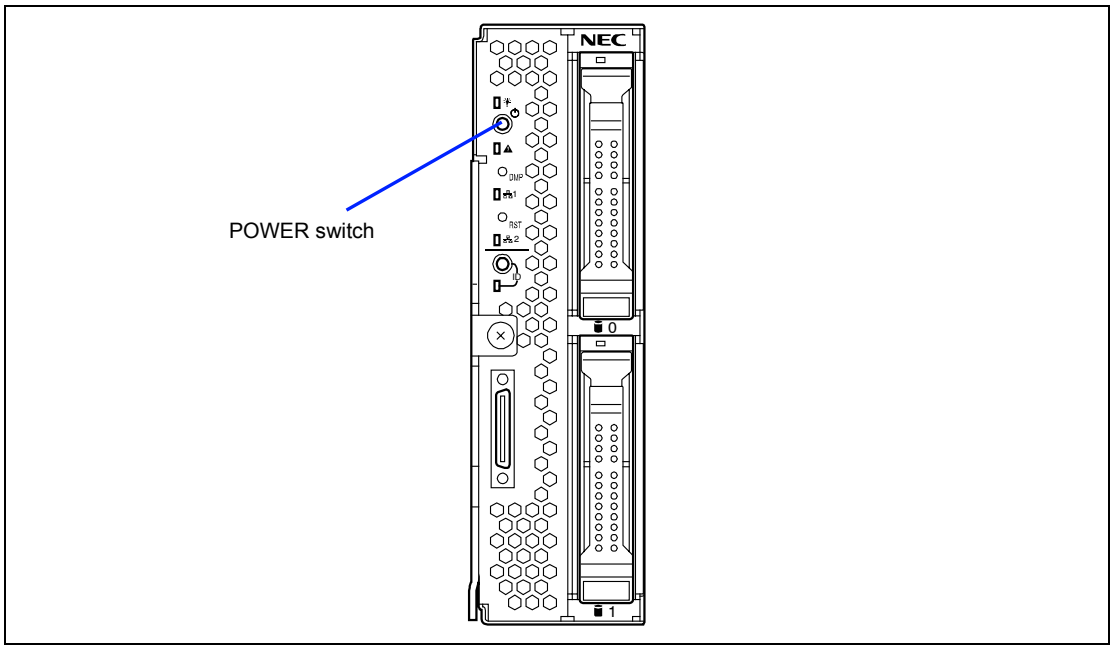
  Use the remote control feature of EXPRESSSCOPE Engine 2 (BMC) to reset the CPU blade.

FORCED SHUTDOWN

Use this function when an OS command does not shut down the CPU blade, the POWER switch does not turn off the CPU blade, or resetting does not work.

Press and hold the POWER switch on the CPU blade for at least four seconds. The power is forcibly turned off. To turn on the power back again, wait approximately 10 seconds after turning off the power.

The power of the CPU blade can be turned off by using remote control feature of EXPRESSSCOPE Engine 2 (BMC).



IMPORTANT: If the remote power-on function is used, cycle the power once to load the OS, and turn off the power again in the normal way.

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Chapter 9

Upgrading Your Server

This chapter describes optional devices available for the CPU blade, procedures for install or removing such optional devices, and notes on using them.

IMPORTANT:

- Optional devices described in this chapter may be installed or removed by any user. However, NEC does not assume any liability for damage to optional devices or the server or malfunctions of the server resulted from installation by the user. NEC recommends you ask your service representative for install or removing any optional devices.
- Make sure to use only optional devices and cables authorized by NEC. Repair of the server due to malfunctions, failures, or damage resulted from installing such devices or cables will be charged.
- When you made any change to the hardware configuration, make sure to update the system (see Chapter 5 for details.).

SAFETY NOTES

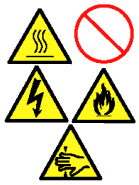
Observe the following notes to install or remove optional devices safely and properly.

⚠ WARNING

Observe the following instructions to use the server safely. Failure to follow these instructions may result in death or serious personal injury. See pages 1-2 to 1-5 for details.

- Do not disassemble, repair, or alter the server.
- Do not remove the lithium, nickel cadmium, or nickel hydrogen battery.
- Do not handle the CPU blade with the power cord being plugged to a power source.

⚠ CAUTION



Observe the following instructions to use the server safely. Failure to follow these instructions may cause a fire, personal injury, or property damage. See pages 1-2 to 1-5 for details.

- Make sure to complete device installation.
- Do not install the device with its cover being removed.
- Do not pinch your finger(s) with component.
- Avoid installation in extreme temperature conditions.

ANTI-STATIC MEASURES

The CPU blade contains electronic components sensitive to static electricity. Avoid failures caused by static electricity when installing or removing any optional devices.

- Wear a wrist strap (an arm belt or anti-static glove).

  Wear a wrist strap on your wrist. If no wrist strap is available, touch an unpainted metal part of the cabinet before touching a component to discharge static electricity from your body.

  Touch a metal part regularly when working with components to discharge static electricity.

- Select a suitable work space.
  - Work with the CPU blade on the anti-static or concrete floor.
  - When you work with the CPU blade on a carpet where static electricity is likely to be generated, make sure take anti-static measures beforehand.

- Use a work table.

  Place the CPU blade on an anti-static mat to work with it.

- Cloth
  - Do not wear a wool or synthetic cloth to work with the CPU blade.
  - Wear anti-static shoes to work with the CPU blade.
  - Take off any jewels (a ring, bracelet, or wrist watch) before working with the CPU blade.

- Handling of components
  - Keep any component in an anti-static bag until you actually install it to the CPU blade.
  - Hold a component by its edge to avoid touching any terminals or parts.
  - To store or carry any component, place it in an anti-static bag.

PREPARATION FOR INSTALLATION

To install or remove an optional device or hard disk drive installed in the CPU blade, you should first remove the CPU blade from the Blade Enclosure.

IMPORTANT: Remove the target CPU blade only. Do not remove any other blank cover or CPU blade from another slot. Be sure to install or remove the CPU blade one by one.

INSTALLATION/REMOVAL PROCEDURE

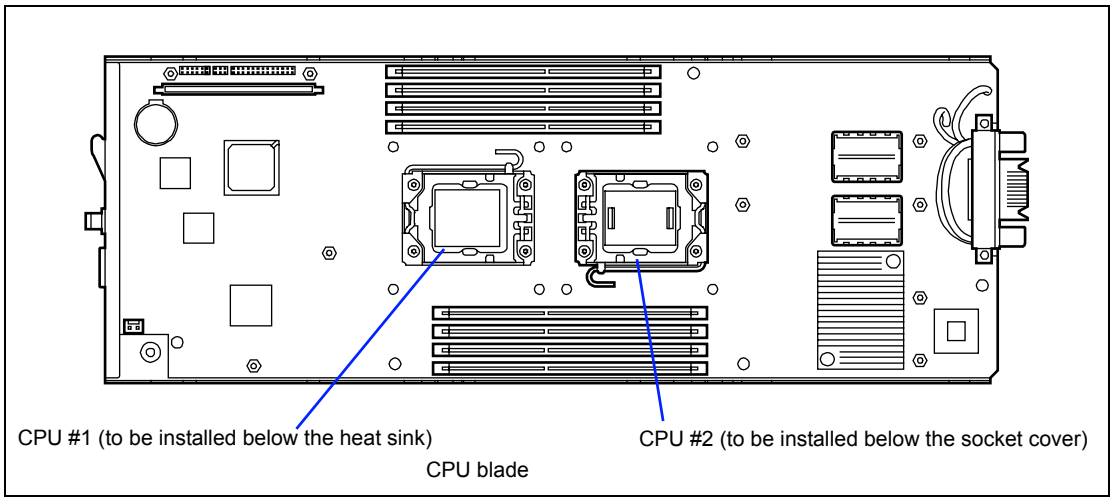
Install or remove the devices in the following procedure.

Processor (CPU)

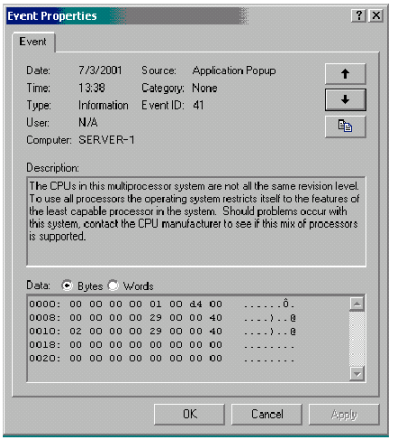
The server may have another CPU installed in addition to the factory-installed CPU (Intel Xeon Processor).

IMPORTANT:

- The CPU to be added must have the same specification (on the core voltage, clock, and others) as the CPU already installed.
- The CPU is extremely sensitive to static electricity. Make sure to touch the metal frame of the server to discharge static electricity from your body before handling the CPU. Do not touch the CPU pins by a bare hand or place the CPU directly on the desk. For static notes, see the section "Anti-static Measures" described earlier.
- Do not operate the system until confirming that the additionally installed CPU is in normal state.
- Make sure to use the CPU authorized by NEC. Installing a third-party CPU may cause a failure of the CPU as well as the server. Repair of the server due to failures or damage resulted from installing such a board will be charged.



NOTE: If the different revision of the processor is installed in the multiprocessor system, Windows logs the following information every startup. If this message is logged, it is no problem for operation.

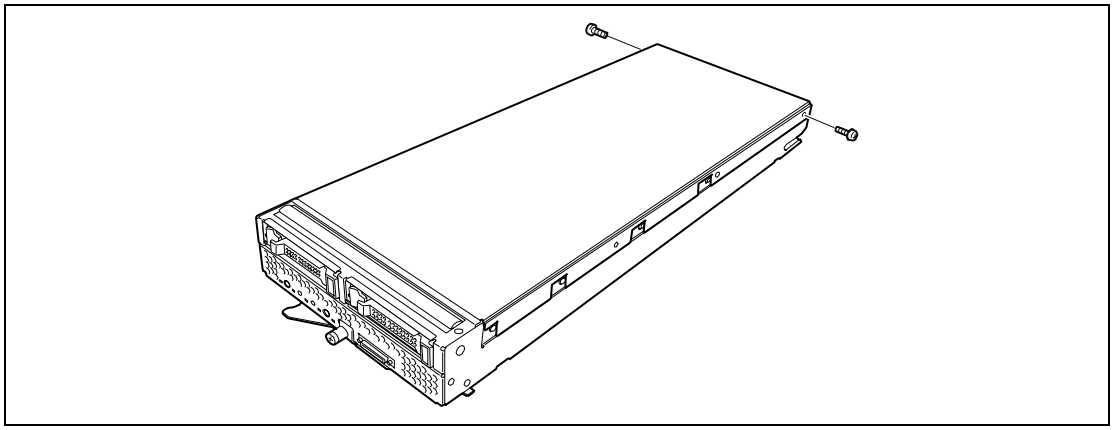

Event Properties
Event
Date: 7/3/2001 Source: Application Popup
Time: 13:38 Category: None
Type: Information Event ID: 41
User: N/A
Computer: SERVER-1
Description:
The CPUs in this multiprocessor system are not all the same revision level. To use all processors the operating system restricts itself to the features of the least capable processor in the system. Should problems occur with this system, contact the CPU manufacturer to see if this mix of processors is supported.
Data: Bytes Words
0000: 00 00 00 00 01 00 d4 00 .....Ô.
0008: 00 00 00 00 29 00 00 40 ....)..@
0010: 02 00 00 00 29 00 00 40 ....)..@
0018: 00 00 00 00 00 00 00 00 ....
0020: 00 00 00 00 00 00 00 00 ....
OK
Cancel
Apply

Installation

Install the CPU in the following procedure.

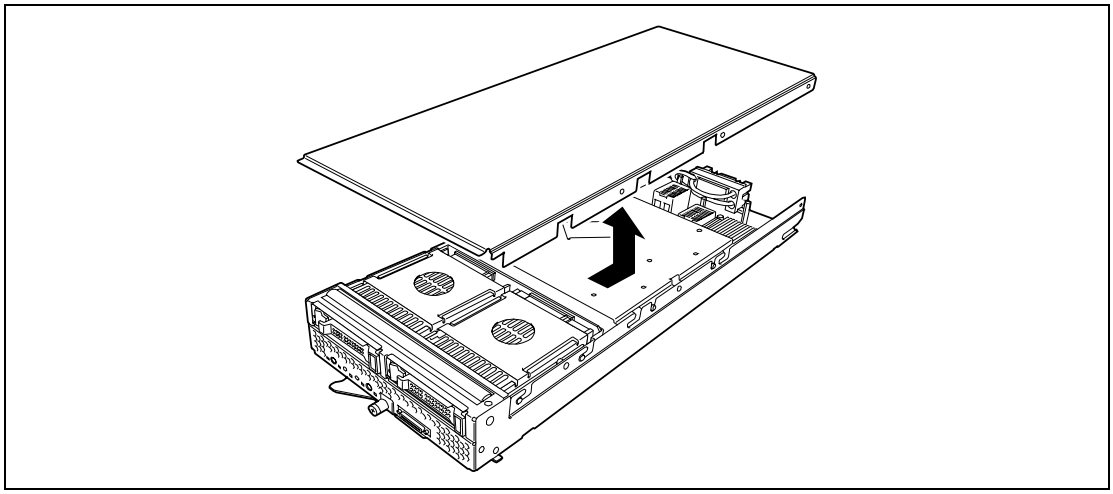
1. After the shutdown processing for the CPU blade to be removed, turn off the power of the CPU blade.
2. Take the CPU blade out from the Blade Enclosure.

   Refer to the User's Guide of the Blade Enclosure.
3. Put the CPU blade on an anti-static sheet with little dust.
4. Remove the two screws fixing the top cover.

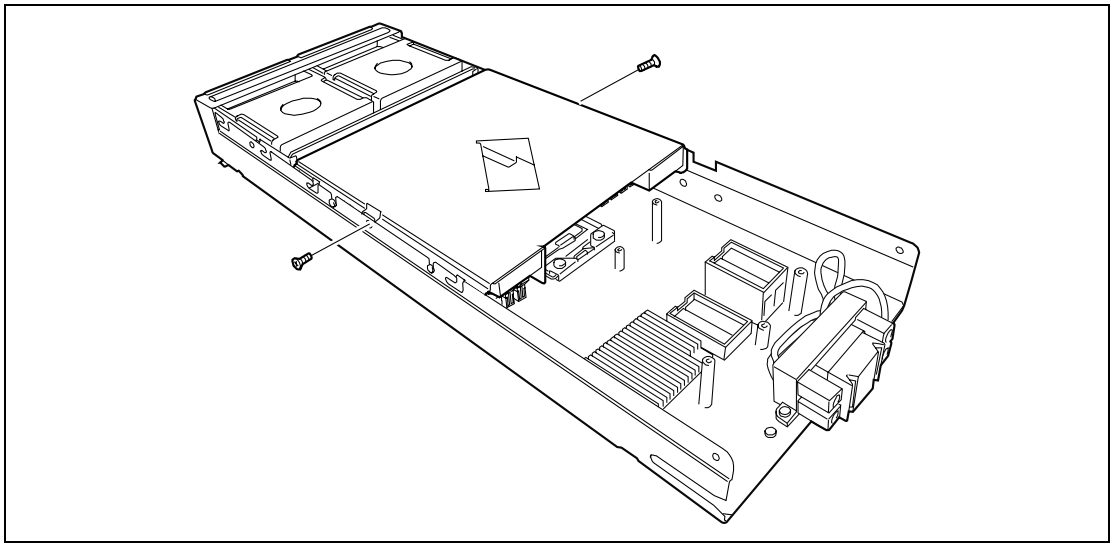


5. Firmly hold the cover, move it slightly toward the rear of the blade, then lift the cover to remove it from the CPU blade.

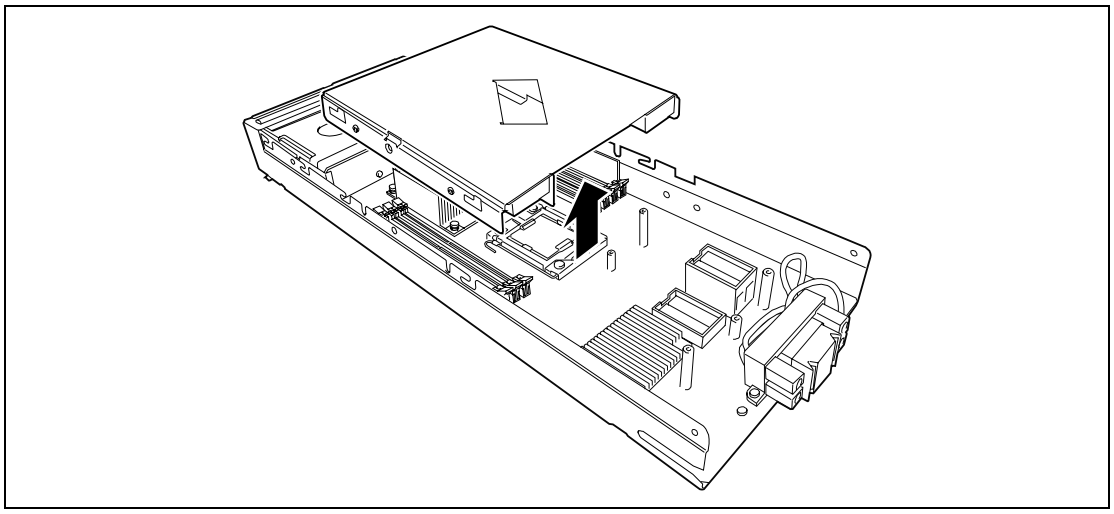
IMPORTANT: Handle the cover carefully so as not to make it contact with any electronic devices on the CPU blade.



6. Remove the two screws from the air duct cover.



7. Firmly hold the cover, and lift it to remove.

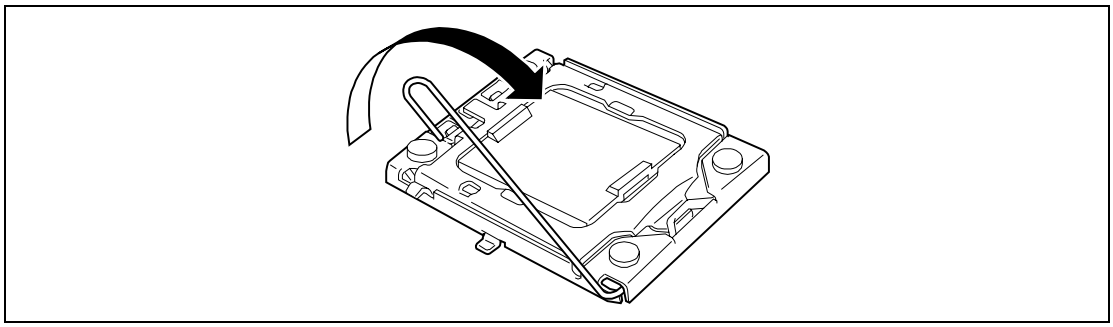


IMPORTANT: Pay attention not to make the cover hit any electronic component on the CPU blade.

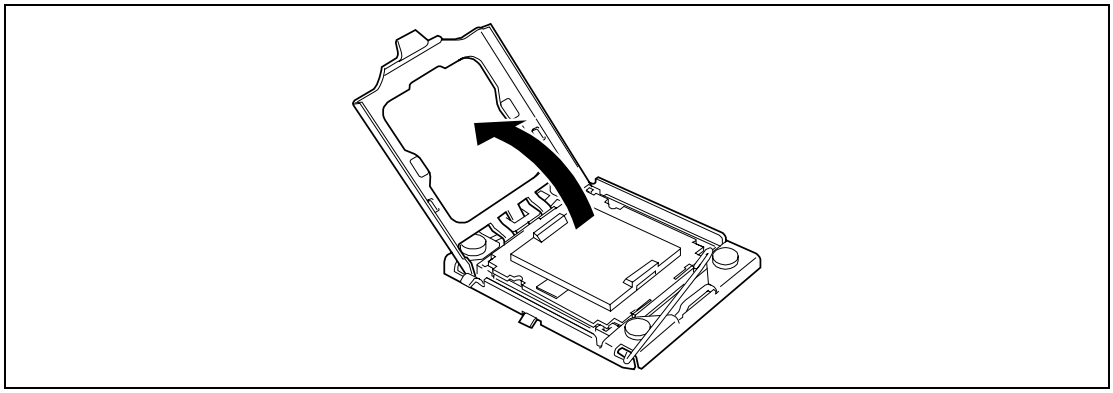
8. Confirm the position of the CPU socket.

9. Lift the socket lever.

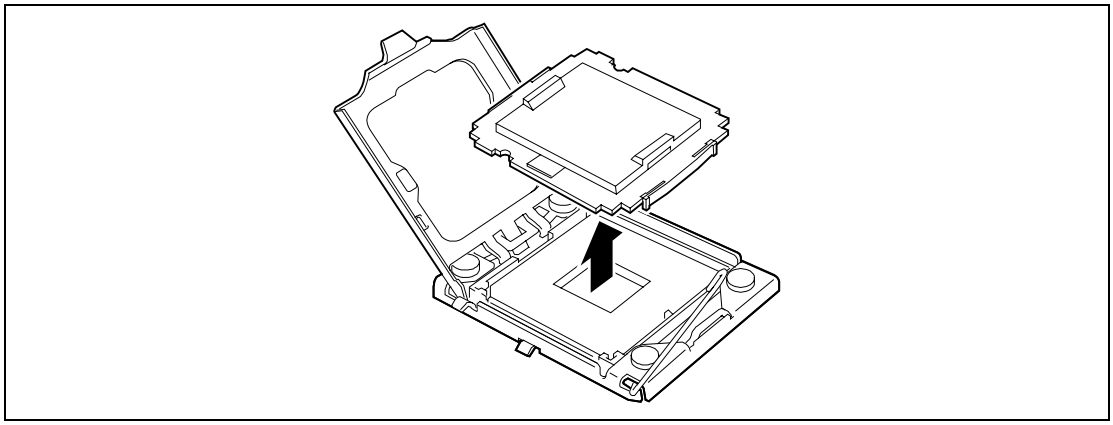
IMPORTANT: Pay attention not to make the lever hit the hard disk drive backplane and mezzanine card.



10. Lift the CPU socket holder.



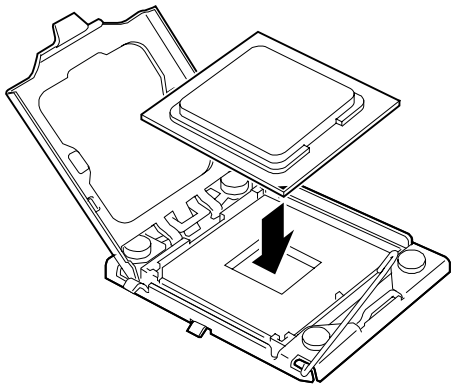
11. Remove the socket cover.



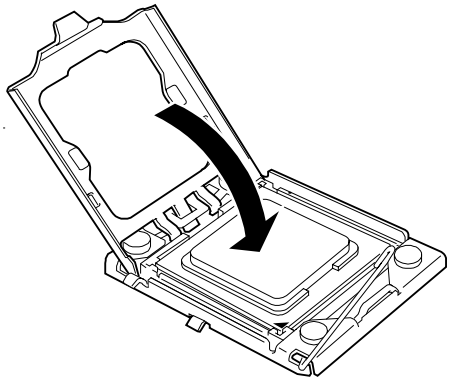
IMPORTANT: Keep the removed socket cover for future use.

12. Put the CPU on the socket carefully and slowly.

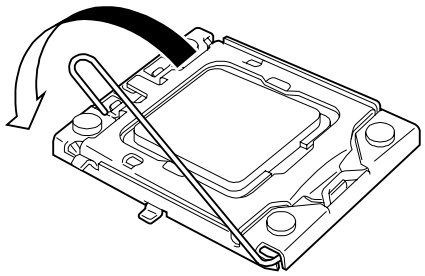
> **NOTE:** Note the direction of the CPU. To prevent the CPU from being inserted into the mating socket incorrectly, a pin mark is put on each of the CPU and the socket. Check the pin marks to insert the CPU into the socket correctly.



13. Push the CPU lightly to the socket, and push down the CPU socket holder.

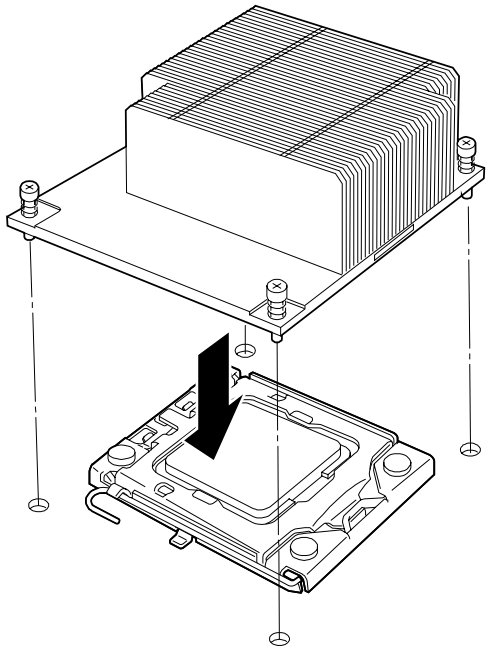


14. Push down the lever to secure the CPU.

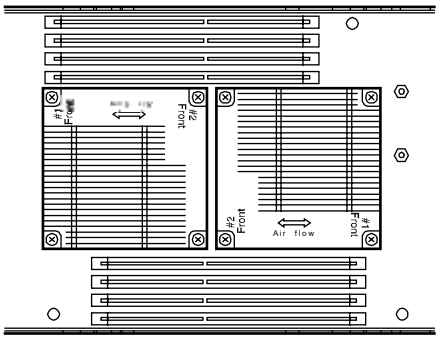


15. Put the heat sink on the CPU and secure it with four screws.

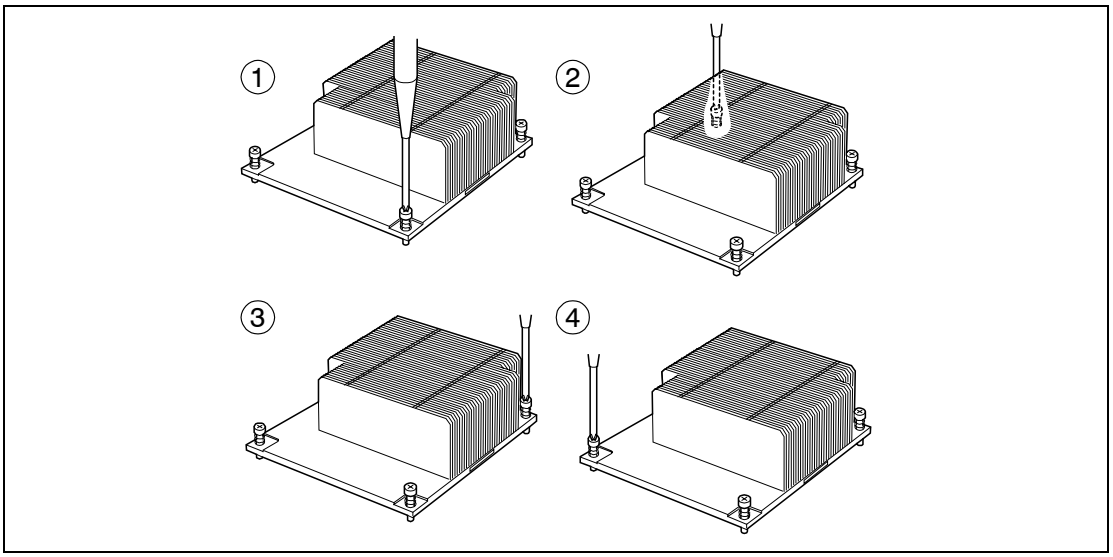
Take care not to touch the cool sheet with your hand.



NOTE: When putting the heat sink on the CPU, make sure the orientation of heat sink. An arrow mark printed on the heat sink must be placed as shown in the figure below.



16. When installing the CPU heat sink, temporarily tighten the four screws on cater corner, then tighten them securely after making sure that the heat sink has been seated in parallel with the CPU socket.



17. Install the components having been removed.

18. Set [Advanced] – [Reset Configuration Data] in the [Advanced] menu to [Yes].

This is required to update the hardware configuration information. See Chapter 4 for details.

19. If the "Computer" driver is set to "ACPI uni-processor PC" or "ACPI single-processor PC," change it to "ACPI multi-processor PC," reboot the system according to the message, and run NEC EXPRESSBUILDER under the Windows operating system to update the system.

Perform the following procedure if

– The system is running under the Windows operating system
– The system is under the 1-CPU configuration

Any change is not required if the "Computer" driver is set to "ACPI multi-processor PC".

Removal

To remove the CPU, provide the preparation of the removal following steps 1 to 8 in the installation procedure and perform steps 9 to 20 in the reverse order. To remove the heat sink, slide it a little on the level and remove it.

IMPORTANT:

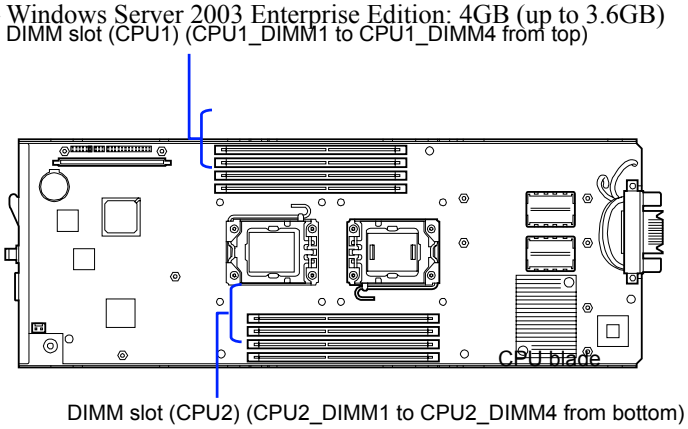
- Remove the CPU only when it is defected.
- After operation, the cool sheet at the bottom of the heat sink may adhere to the CPU. To remove the heat sink, first turn it left and right to have it apart from the CPU. If you remove the heat sink with the cool sheet adhering to the CPU, the CPU and/or the socket may be damaged.
- Put a socket cover on CPU #2 if it is equipped with no CPU.
- The operation of the CPU blade cannot be secured if the CPU is installed only on the CPU #2 socket.
- To reinstall the CPU having been removed, the cool sheet should be replaced with a new one. Contact you service representative.

DIMM

The DIMM (Dual Inline Memory Module) is inserted into the DIMM socket on the CPU blade. The CPU blade includes eight DIMM sockets.

IMPORTANT:

- The DIMM is easily affected by static electricity. Handle the DIMM after making your body contact with a metallic frame section of the server to discharge the static electricity on your body. Do not make bare hands contact with terminals and components on the DIMM. In addition, do not put the DIMM on a desk directly. See "Static Precautions" for details of the static electricity.
- Do not use any DIMM not approved by NEC. If an unapproved third party's DIMM is installed in the server, not only the DIMM but also the CPU blade may be defected. You will be charged by any repair of a malfunction or defect caused by such a device within the warranty period.
- Number of DIMMs to be installed depends on its specification.
  Registered DIMM: Can be installed one by one.
  Unbuffered DIMM: Must be installed two in pair.
  Installed DIMMs must be the same speed and specification. The CPU blade does not operate correctly if Registered DIMM and Unbuffered DIMM are mixedly installed.
- When the server has only one CPU (a single CPU is installed in CPU #1 slot), DIMM slots CPU1_DIMM1 to CPU1_DIMM4 (4 slots) are available.
- Whole capacity of installed memory may not be detected due to restriction of Windows.
  – Windows Server 2003 Standard Edition: 4GB (up to 3.6GB)
  – Windows Server 2003 Enterprise Edition: 4GB (up to 3.6GB)



NOTES:

- Up to 64GB memory can be added.
- In the normal state, the CPU blade does not contain memory. The memory is a required option.

Adding Order and Precautions

- Number of DIMMs to be installed depends on its specification.
  Registered DIMM: Can be installed one by one.
  Unbuffered DIMM: Must be installed two in pair.
- Two DIMMs must be the same capacity and same speed if they are of unbuffered type. (Check the labels on the DIMM board.)
- Install the first pair into slots #1 and #2, then the second pair in slots #3 and #4 if DIMMs of unbuffered type are used.
- If you install N8402-040 8GB DIMM (Quad-Rank) and other DIMM in the following slot, be sure to install 8GB memory board in the slot having the smaller number (CPU1_DIMM3 or CPU2_DIMM3).
  - CPU1_DIMM3 and CPU1_DIMM4
  - CPU2_DIMM3 and CPU2_DIMM4 *

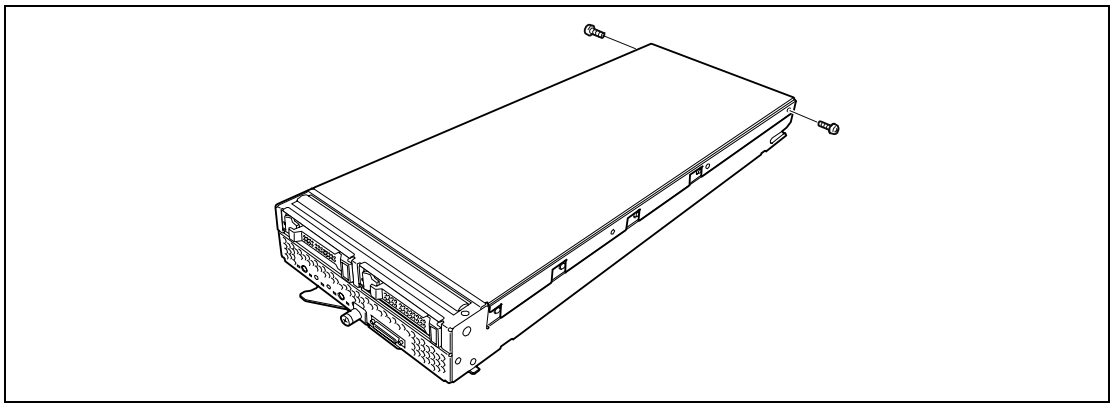
  * In the 2-CPU configuration

Installation

Install the DIMM on the CPU blade depending on the following procedure:

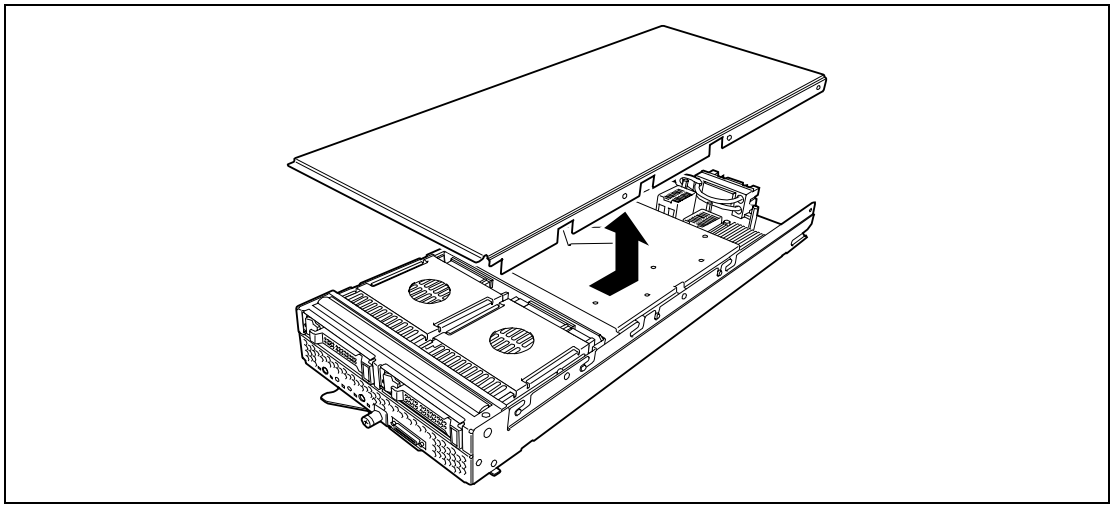
1. After the shutdown processing for the CPU blade to be removed, turn off the power of the CPU blade.
2. Pull out the CPU blade from the Blade Enclosure.

   Refer to the User's Guide of the Blade Enclosure.
3. Place the CPU blade on anti-static sheet with little dust.
4. Remove the two screws fixing the top cover.

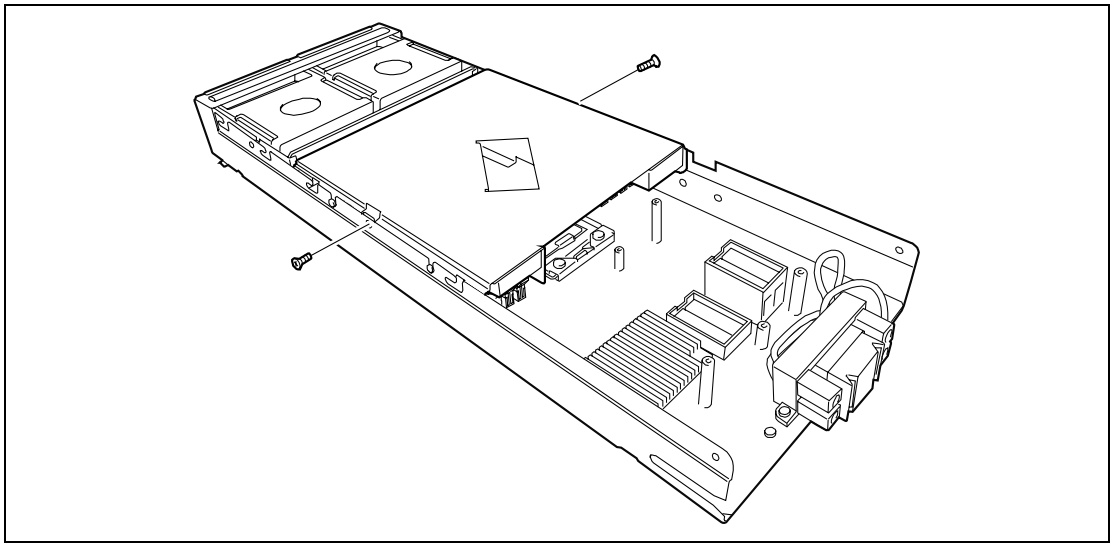


5. Firmly hold the cover, move it slightly toward the rear of the blade, then lift the cover to remove it from the CPU blade.

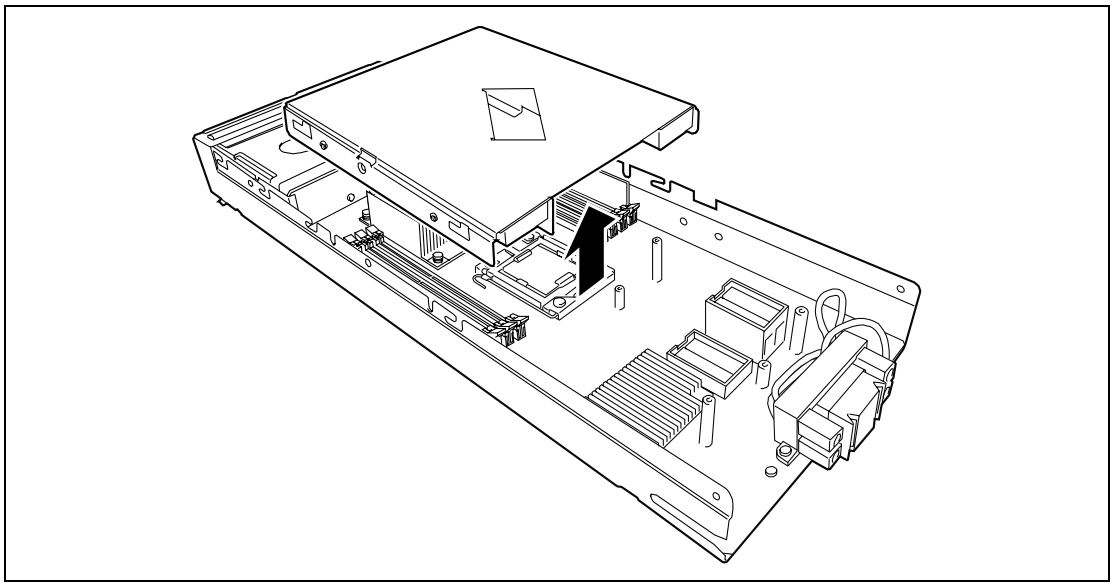
IMPORTANT: Handle the cover carefully so as not to make it contact with any electronic devices on the CPU blade.



6. Remove the two screws from the air duct cover.

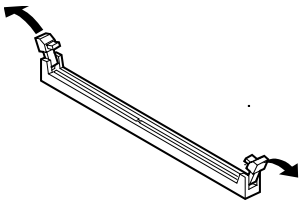


7. Firmly hold the cover, and lift it to remove.

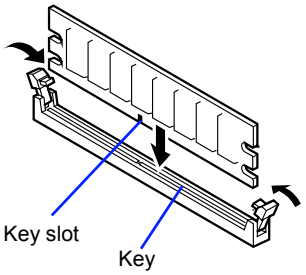


IMPORTANT: Pay attention not to make the cover hit any electronic component on the CPU blade.

8. Open the levers at both ends of the DIMM socket.



9. Push the DIMM into the socket straight.



IMPORTANT: Use extreme care when installing a DIMM. Applying too much pressure can damage the socket. Keyed DIMMs insert only one way.

NOTE: Make sure of the orientation of the DIMM. The connecting side of the DIMM has a cut-out to prevent an incorrect insertion.

If the DIMM is inserted into the DIMM socket, the lever is automatically closed.

10. Close the lever firmly.
11. If you need to install two or more DIMMs, install them according to steps 8 through 10.
12. Install the components removed in steps 1 and 2.
13. Make sure that no error message appears on the POST screen.

    See Chapter 8 for details of the POST error messages.
14. Run SETUP and select menus in the order of [Advanced] and [Memory Configuration] to make sure that "DIMM Group #1 Status" is set to "Normal" (see Chapter 4).
15. Set [Advanced] – [Reset Configuration Data] in the [Advanced] menu to [Yes].

    This is required to update the hardware configuration information. See Chapter 4 for details.
16. Set the paging file size to a value larger than the recommended value (installed memory * 1.5) (for Windows).

Removal

Remove the DIMM in the following procedure.

> **NOTE:** To remove the defected DIMM, check the error message appearing in POST or NEC ESMPRO to confirm the CPU blade on which the detected DIMM is installed.

1. After providing the shutdown processing for the CPU blade to be removed, turn off the power of the CPU blade.
2. Pull out the CPU blade from the Blade Enclosure.

   Refer to the User's Guide of the Blade Enclosure.
3. Place the CPU blade on anti-static sheet with little dust.
4. Remove the two screws fixing the top cover.
5. Firmly hold the cover, move it slightly toward the rear of the blade, then lift the cover to remove it from the CPU blade.
6. Remove the two screws from the air duct cover.
7. Firmly hold the cover, and lift it to remove.
8. Open the levers at the both ends of the DIMM socket to be removed.

   The lock is released to allow you to remove the DIMM.

   > **NOTE:** If you are removing DIMM of unbuffered type, remove the pairing DIMM from another DIMM connector.
9. Install a new DIMM.
10. Install the components removed in steps 2 and 7.
11. Turn on the power of the CPU blade. Make sure that no error message appears in POST.

    If an error message appears, write down the message and see the error message list in Chapter 8.

    If the CPU blade is not started, the DIMM may not be installed on the socket correctly. Install the DIMM again.
12. Run SETUP, select [Yes] after selecting [Advanced] – [Memory Configuration] – [Memory Retest] to restart the CPU blade, and clear the error information of the removed DIMM (see Chapter 4).
13. Set [Advanced] – [Reset Configuration Data] in the [Advanced] menu to [Yes].

    This is required to update the hardware configuration information. See Chapter 4 for details.
14. Set the paging file size to a value larger than the recommended value (installed memory * 1.5) (for Windows).

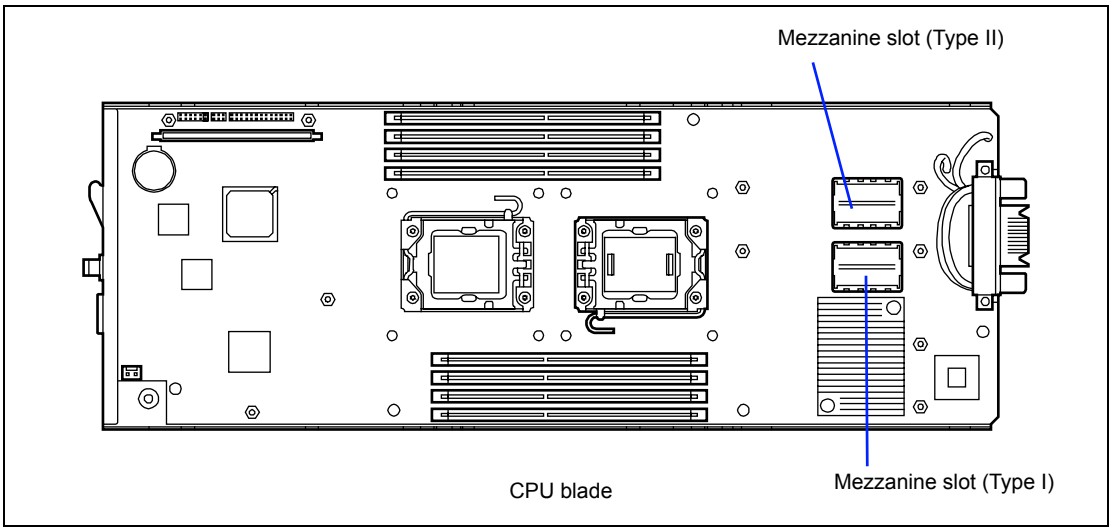
Mezzanine Card

The CPU blade can contain two mezzanine cards for blade which allows a network extension or a file device feature extension. To install a mezzanine card, use the mezzanine card slot installed on the CPU blade. The mezzanine card slot is factory-installed on the CPU blade.

IMPORTANT:

- The mezzanine card is extremely sensitive to static electricity. Make sure to touch the metal frame of the server to discharge static electricity from your body before handling the mezzanine card. Do not touch the terminals and parts on the mezzanine card by a bare hand and place the cards directly on the desk. For static notes, see the section "Anti-static Measures" described earlier.
- A combination of boards can be installed in the Blade Enclosure under certain restrictions. Contact your service representative for details.

NOTE: Some optional mezzanine cards use expansion ROMs on the boards. Refer to the manual shipped with the board to check whether the expansion ROMs should be expanded. Use the BIOS setup utility "SETUP" for the setting. See Chapter 4 for details.



Notes

Note the followings in the installation or removal of the mezzanine card.

- Be careful not to make your hands touch the terminals of the mezzanine card slot directly. If you do not keep it, the oil and/or dirt on the hands may adhere to the terminals to result in contact failure.
- For the optional ROMs on the unbooted LAN device, set "Disabled" with the BIOS SETUP utility.
- If a bootable mezzanine card (such as FibreChannel controller or LAN board) is installed, check the boot priority on the [Boot] menu of the BIOS SETUP utility.
- The slot number for the Type I mezzanine card is "MEZ1", and "MEZ2" for Type II mezzanine card.

Installation

Install a mezzanine card in mezzanine card slot in the following procedure.

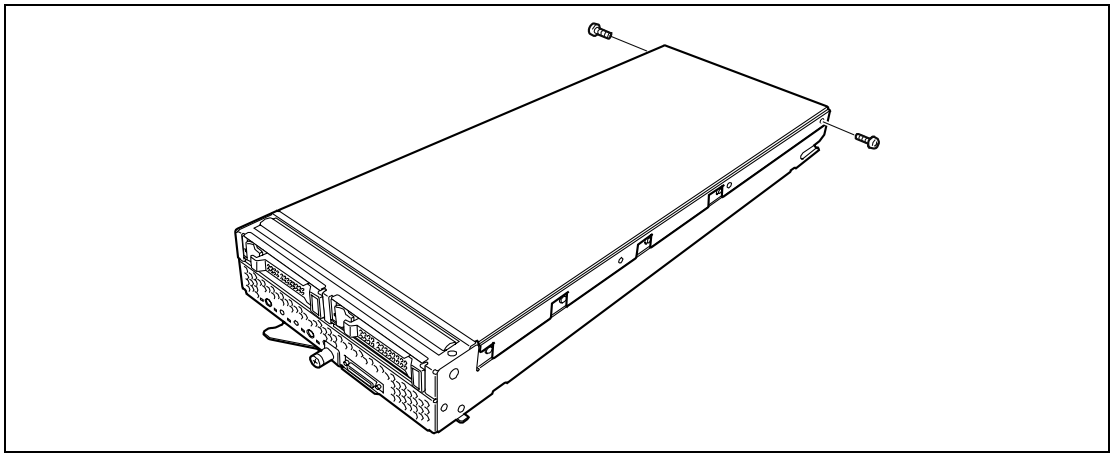
IMPORTANT: There are two types of mezzanine card for blade, Type I and Type II.
The Type I mezzanine card can be installed in either of connectors Type I and Type II. The Type II mezzanine card can be installed in Type II connector only.
To install the mezzanine card, start installation from the bottom slot (for Type I).

NOTE: Before installing mezzanine card, make sure that the connection port on the card engages with the connector on the mezzanine card slot.

1. After the shutdown processing for the CPU blade to be removed, turn off the power of the CPU blade.
2. Pull out the CPU blade from the Blade Enclosure.

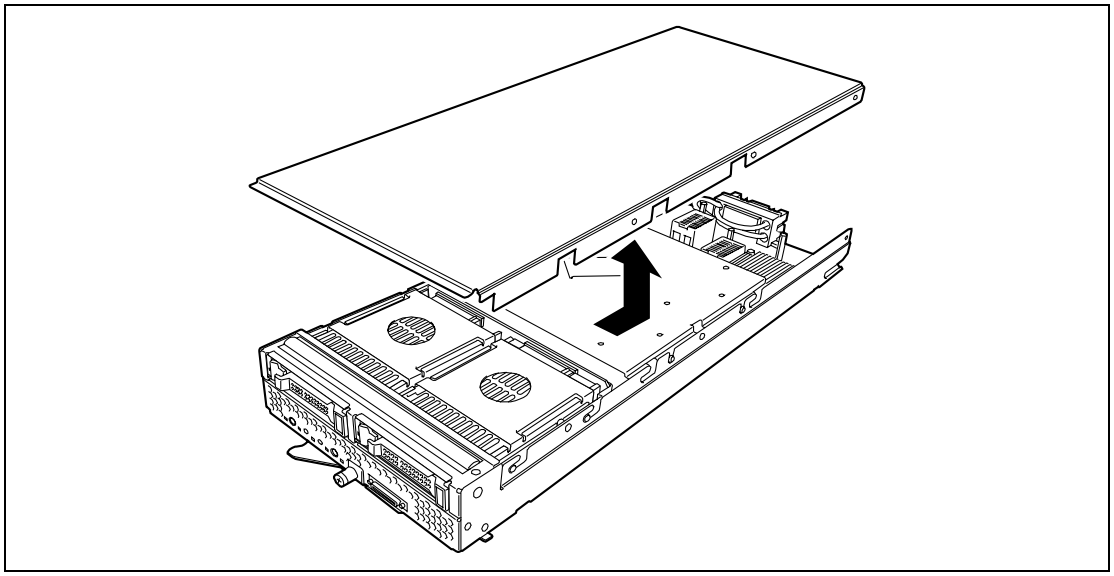
   Refer to the User's Guide of the Blade Enclosure.
3. Place the CPU blade on anti-static sheet with little dust.

4. Remove the two screws fixing the top cover.

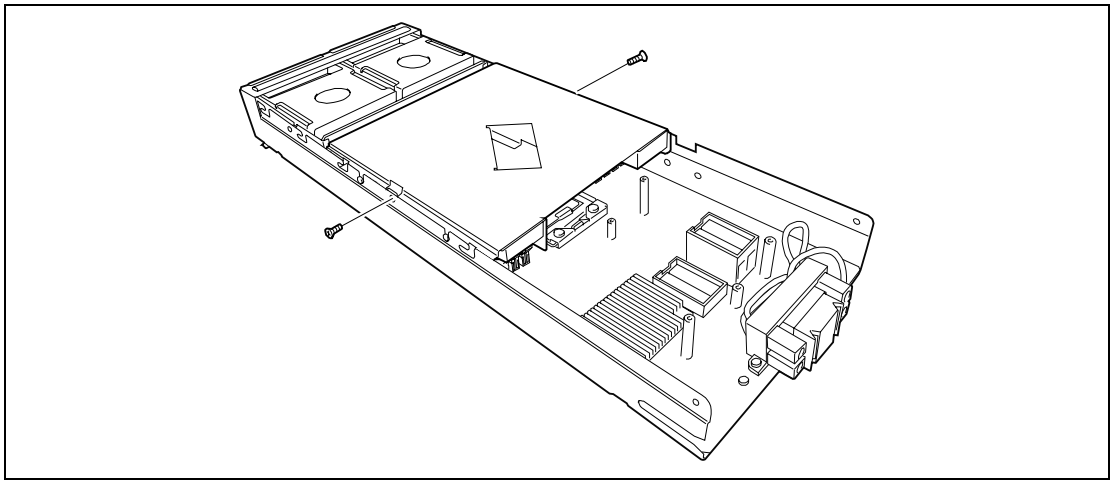


5. Firmly hold the cover, move it slightly toward the rear of the blade, then lift the cover to remove it from the CPU blade.

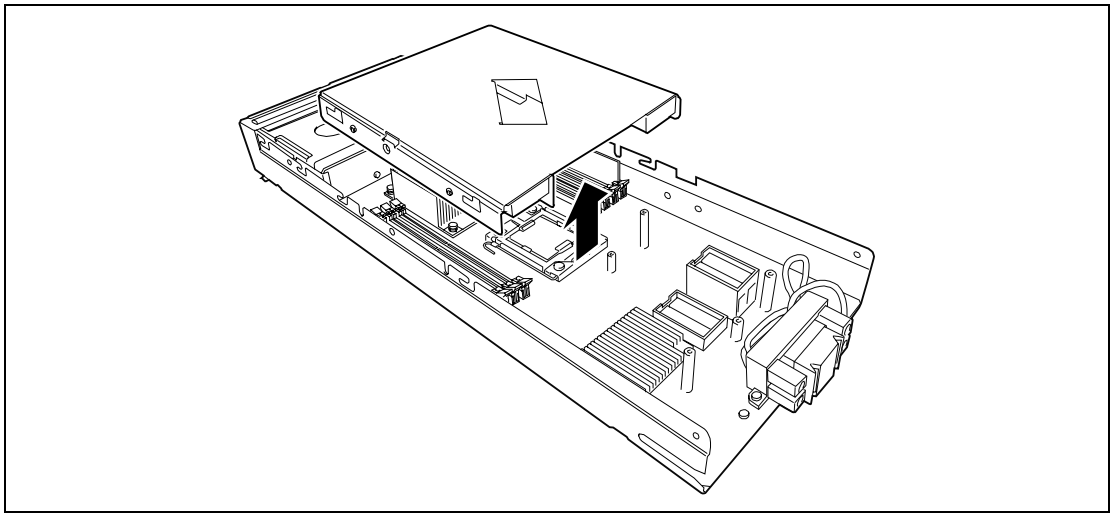
IMPORTANT: Handle the cover carefully so as not to make it contact with any electronic devices on the CPU blade.



6. Remove the two screws from the air duct cover.



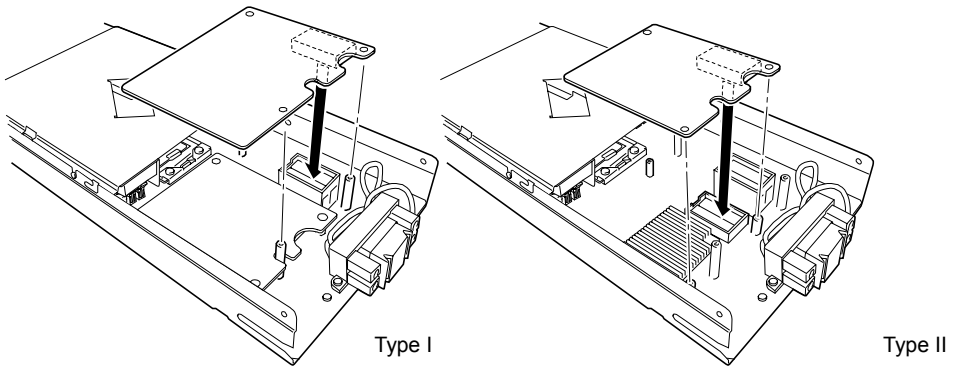
7. Firmly hold the cover, and lift it to remove.



IMPORTANT: Pay attention not to make the cover hit any electronic component on the CPU blade.

8. Check the position of the slot to install the mezzanine card.

9. From top of the CPU blade, position the connector of the mezzanine so that it aligns the connector of the mezzanine card slot, and insert the mezzanine card straight into the slot.



IMPORTANT:

- Do not make your body contact with the terminals on the board. Some malfunction may occur if the board is installed with dirt and/or oil adhering to the terminals.
- Insert the mezzanine card straight into the connector. The terminal or connector may be damaged if it is inclined.
- If the board cannot be installed securely, remove the board once and then install it again. Adding excess force to the board may cause the board to be damaged.

10. Push the mezzanine card with fingers firmly toward the CPU blade to connect the card to the slot.

11. Tighten the fixing screws to fix the mezzanine card to the spacer on the CPU blade.

12. Install the components having been removed.

13. Install the CPU blade having been removed to the Blade Enclosure according to the User's Guide of the Blade Enclosure.

14. Turn on the power of the CPU blade. Make sure that any error messages associated with the board do not appear on the POST screen.

See Chapter 8 for details of POST error messages.

15. Select [Advanced] – [Reset Configuration Data] on the [Advanced] menu and set [Reset Configuration Data] to [Yes].

This is required to update the hardware update information. See Chapter 4 for details.

16. Run the BIOS configuration utility of the installed board to provide setup for the board.

The existence of the utility and its start and operation procedures vary depending on the type of the board. Refer to the documentation coming with the board for details.

Removal

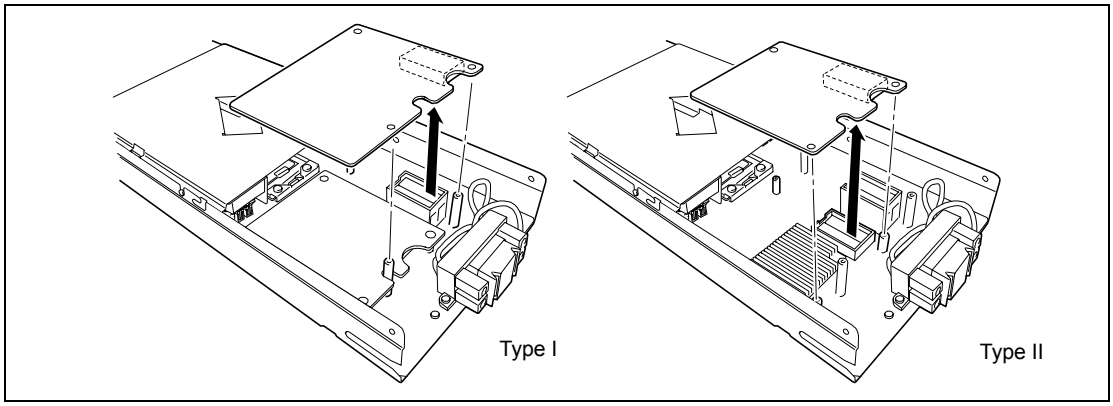
To remove the board, follow the procedure below:

1. Shutdown the CPU blade to be removed and turn off the power of the CPU blade.
2. Take the CPU blade out from the Blade Enclosure.

   Refer to the User's Guide of the Blade Enclosure.
3. Put the CPU blade on an anti-static sheet with little dust.
4. Remove the two screws fixing the top cover.
5. Firmly hold the cover, move it slightly toward the rear of the blade, then lift the cover to remove it from the CPU blade.
6. Remove the two screws from the air duct cover.
7. Firmly hold the cover, and lift it to remove.

   IMPORTANT: Pay attention not to make the cover hit any electronic component on the CPU blade.
8. Remove three screws fixing the mezzanine card.
9. Hold both ends of the mezzanine card and pull the card out from the slot.

   Lift the card perpendicular to the CPU blade.



10. Install the components having been removed in Steps 4 through 7.
11. Install the CPU blade having been removed to the Blade Enclosure according to the User's Guide of the Blade Enclosure.

Interface Card for Connecting Hard Disk Drive

The CPU blade can contain an interface card of the following types for connecting hard disk drives.

- N8403-026 RAIDcontroller

  Controller supporting hardware RAID. Contains one channel (two ports per channel) of SAS/SATA interface connector.

- N8403-027 SATA interface card

  Card supporting software RAID. Contains one channel (two ports per channel) of SATA interface connector.

IMPORTANT:

- The interface card for connecting hard disk drive is extremely sensitive to static electricity. Make sure to touch the metal frame of the server to discharge static electricity from your body before handling the interface card. Do not touch the terminals and parts on the interface card by a bare hand and place the cards directly on the desk. For static notes, see the section "Anti-static Measures" described earlier.
- A combination of the card and hard disk drives that can be installed in the CPU blade under certain restrictions. Contact your service representative for details.

Notes

Note the followings in the installation or removal of the interface card.

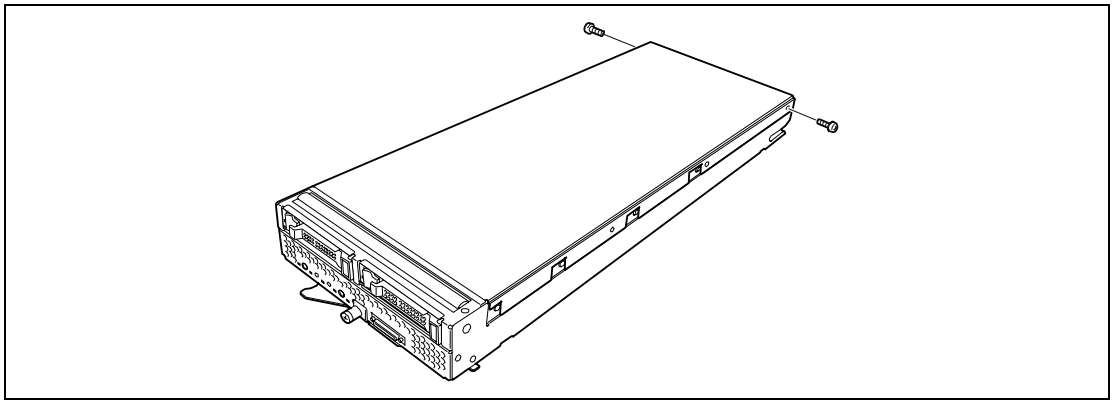
- Be careful not to make your hands touch the terminals of the interface card connector directly. If you do not keep it, the oil and/or dirt on the hands may adhere to the terminals to result in contact failure.
- The interface card for connecting hard disk drive is the required option. Be sure to install either of N8403-026 or N8403-027.

Installation and Removal

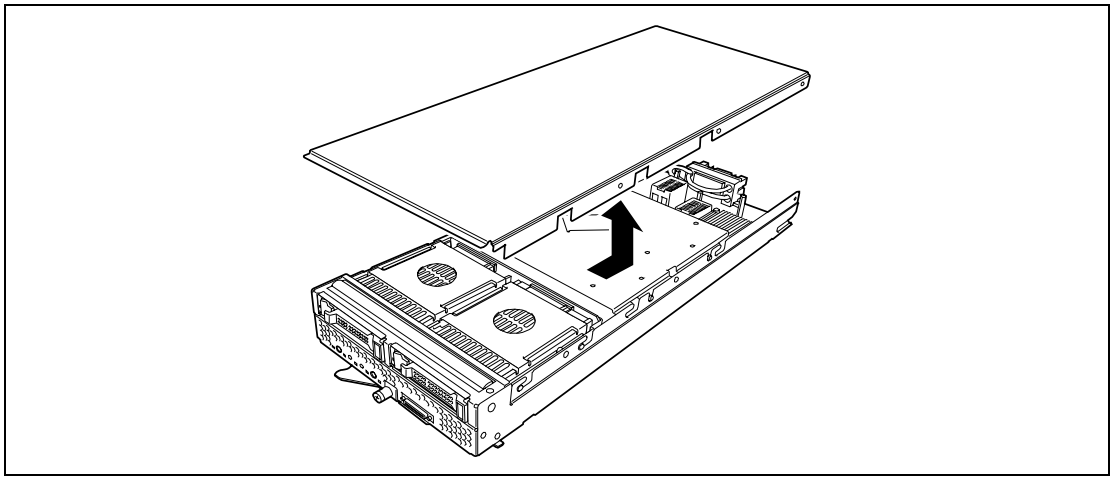
Install or remove an interface card for connecting hard disk drive in the following procedure.

1. After the shutdown processing for the CPU blade to be removed, turn off the power of the CPU blade.
2. Take out the CPU blade from the Blade Enclosure.

   Refer to the User's Guide of the Blade Enclosure.
3. Place the CPU blade on anti-static sheet with little dust.
4. Remove the hard disk drive.
5. Remove the two screws fixing the top cover.

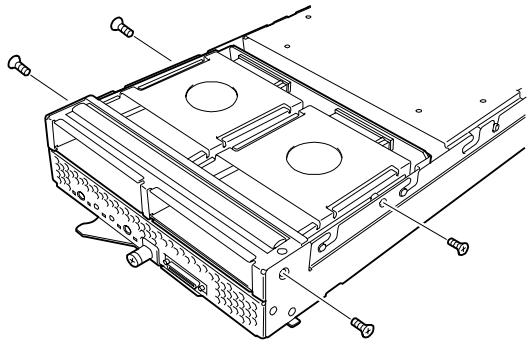


6. Firmly hold the cover, move it slightly toward the rear of the blade, then lift the cover to remove it from the CPU blade.

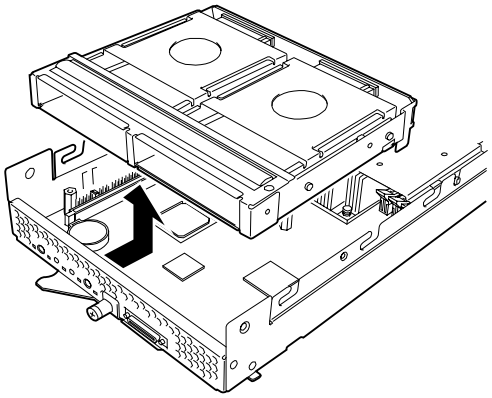


IMPORTANT: Handle the cover carefully so as not to make it contact with any electronic devices on the CPU blade.

7. Remove the four screws from the HDD bracket.



8. Firmly hold the bracket knob, move the bracket slightly toward the rear of the blade, then lift the bracket to remove it from the CPU blade.



IMPORTANT:

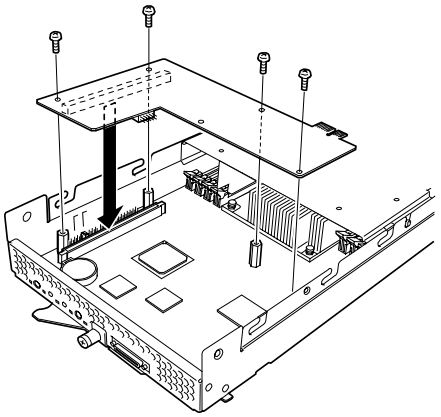
- Pay attention not to make the bracket hit any electronic component on the CPU blade.
- Do not make your body contact with the terminals on the hard disk drive or on the backplane. Some malfunction may occur if the hard disk drive or backplane is installed or removed with dirt and/or oil adhering to the terminals.
- Pay attention not to be injured with terminals on the hard disk drive or on the backplane.

9. Remove the four screws from the interface card for hard disk drive.

10. Remove the interface card for hard disk drive.

Pull up the interface card perpendicular to the CPU blade.

11. From top of the CPU blade, insert the interface card straight into the slot.



IMPORTANT:

- Do not make your body contact with the terminals on the card. Some malfunction may occur if the card is installed with dirt and/or oil adhering to the terminals.
- Insert the interface card straight into the connector. The terminal or connector may be damaged if it is inclined.
- If the card cannot be installed securely, remove the card once and then install it again. Adding excess force to the card may cause the card to be damaged.

12. Push the connector of the interface card with fingers firmly toward the CPU blade to connect the card to the slot.

13. Tighten the four fixing screws to fix the interface card to the CPU blade.

14. Install the components having been removed.

15. Install the CPU blade having been removed to the Blade Enclosure according to the User's Guide of the Blade Enclosure.

16. Turn on the power of the CPU blade. Make sure that any error messages associated with the card do not appear on the POST screen.

See Chapter 8 for details of POST error messages.

17. Select [Advanced] – [Reset Configuration Data] and set it to [Yes].

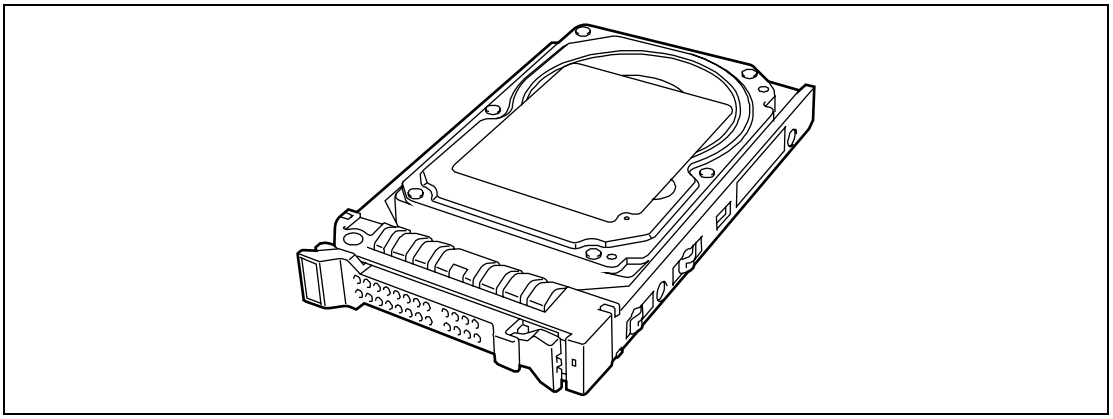
This is required to update the hardware configuration information. See Chapter 4 for details.

18. Run the BIOS configuration utility of the installed card to provide setup for the card.

The existence of the utility and its start and operation procedures vary depending on the type of the card. Refer to the documentation coming with the card for details.

Hard Disk Drive

The CPU blade can contain up to two 2.5-inch hard disk drives. This section describes the installation and removal (or replacement) procedure.



IMPORTANT:

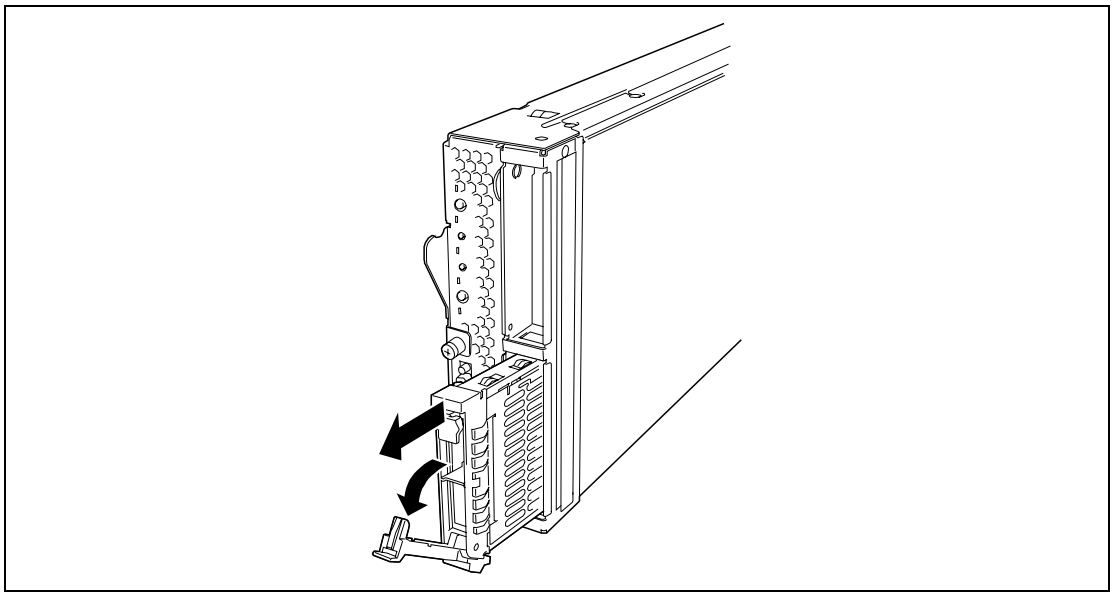
- The hard disk drive is extremely sensitive to static electricity. Make sure to touch the metal frame of the server to discharge static electricity from your body before handling the hard disk drive. Do not touch the terminals and parts on the hard disk drive by a bare hand and place the hard disk drive directly on the desk. For static notes, see the section "Anti-static Measures" described earlier.
- Do not use any hard disk drives not approved by NEC. If an unapproved third party's hard disk drive is installed in the CPU blade, not only the hard disk drive but also the CPU blade may be defected.
- If hard disk drives of different disk capacities co-exist in the CPU Blade, the unit can operate normally. To use a RAID drive based on N8403-027 SATA interface card/N8403-026 RAID controller, use hard disk drives of the same model number.
- Pay attention not to apply shock or vibration to the hard disk drive. Do not push the surface of the hard disk drive when installing or removing the hard disk drive.
- Use the hard disk drive mounted to the tray dedicated to the CPU blade. Do not remove the hard disk drive from the tray to mount any other hard disk drive. Doing so may cause a failure of the hard disk drive.

Installation or Removal of Hard Disk Drive

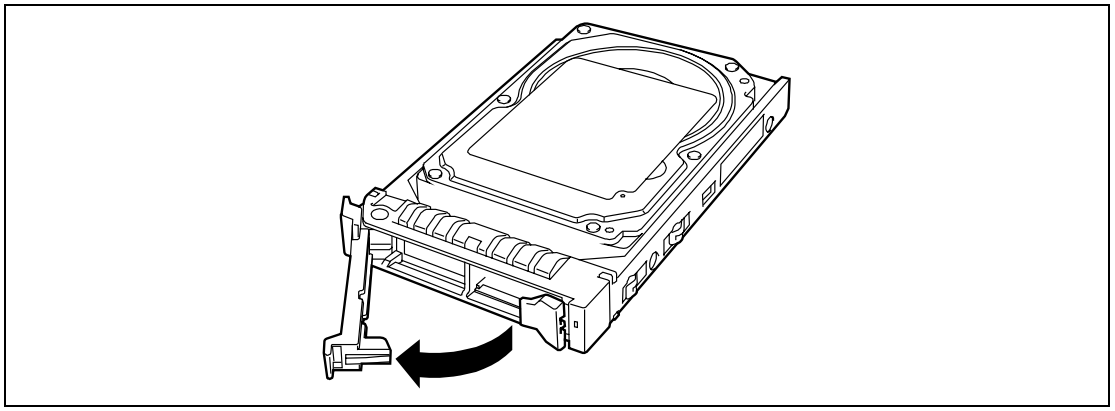
Install the hard disk drive in the following procedure. Install the first hard disk drive in slot 0 (left), then the second hard disk drive in slot 1 (right).

1. Remove a tray that does not contain hard disk drive.

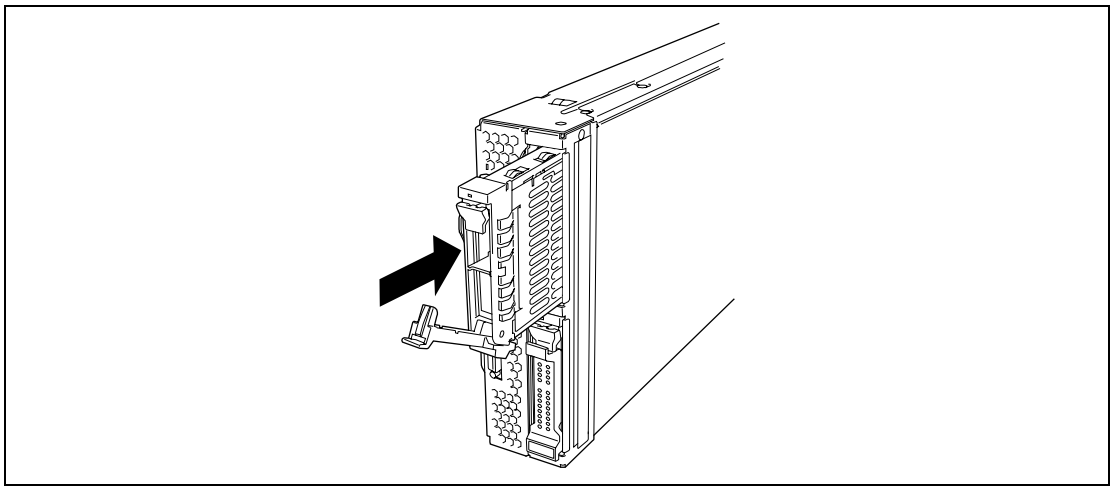
IMPORTANT: Keep the removed hard disk tray for future use.



2. Release the lock of the lever on the hard disk drive to make the lever opened.



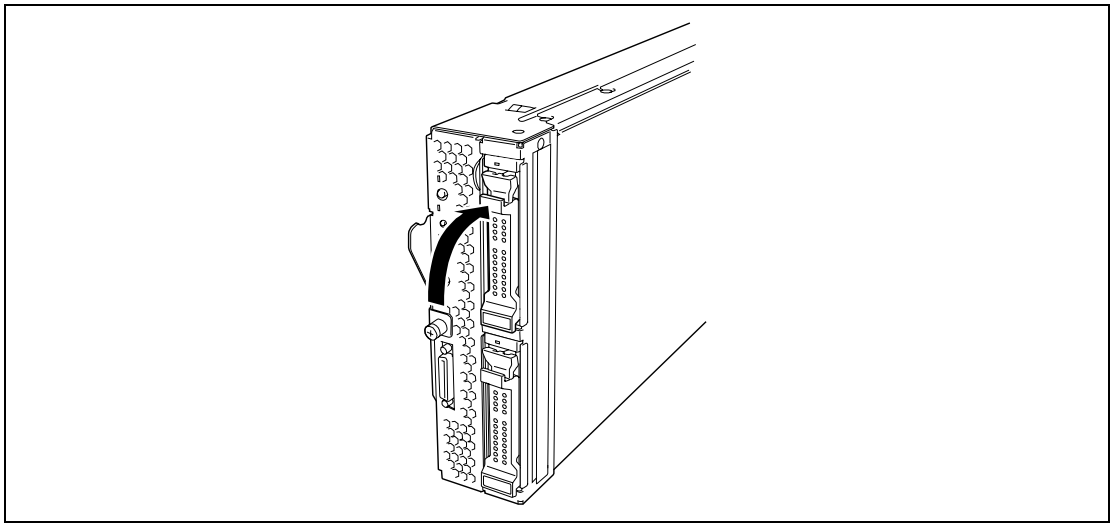
3. Hold the hard disk drive so that the BP connector faces the CPU blade and the lever on the front of the drive carrier faces the top.
4. Insert the end of the drive carrier into the hard disk drive slot slowly and carefully.



5. Insert the drive carrier until it hits the slot end, and lift the lever.

   A click occurs to lock the drive carrier.

NOTE: Make sure that the lever hook is hung on the frame.



The removal procedure is the reverse of the installation procedure.

Replacement of Hard Disk Drive

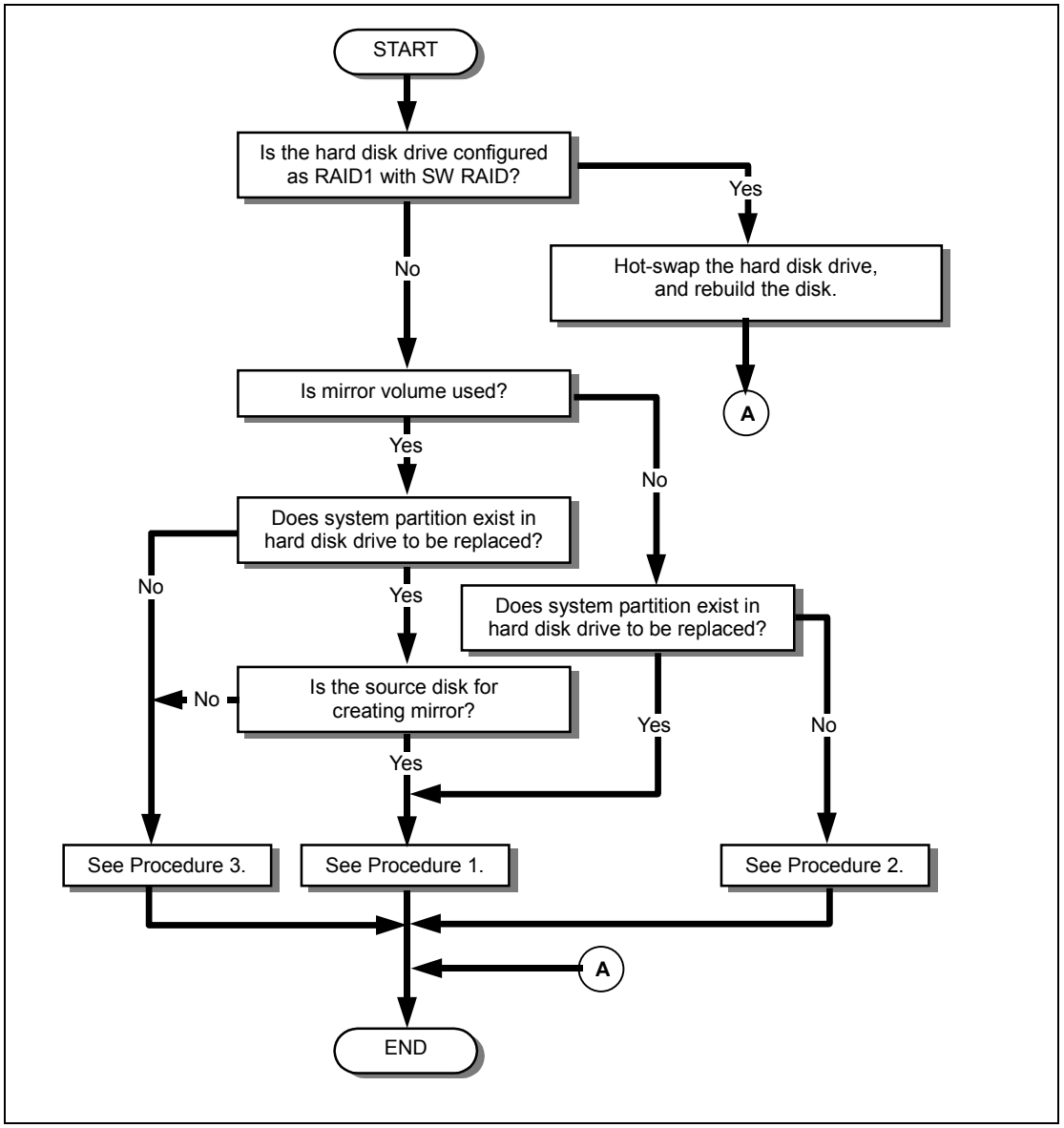
Depending on the operating system and/or server management software to be used, hard disk drives must be replaced in the defined procedure to manage the hard disk drives appropriately.

If Windows is used as OS and NEC ESMPRO Manager and NEC ESMPRO Agent are used as the server management software, replace the hard disk drives in the following procedure. To do these jobs, you should log on to the system as a user having the administrator authority.

The working procedure varies depending on the existence of the system partition and mirror volume. Replace the hard disk drives in the procedure meeting your system environment based on the figure on the next page.

To replace a hard disk drive in a RAID drive (RAID 1) with redundancy by SW RAID, you can use the hot-swap rebuild feature.

If you are using the optional disk array controller, refer to the manual that comes with the optional disk array controller to replace a hard disk drive.


START
Is the hard disk drive configured as RAID1 with SW RAID?
Yes
No
Hot-swap the hard disk drive, and rebuild the disk.
A
Is mirror volume used?
Yes
No
Does system partition exist in hard disk drive to be replaced?
No
Yes
Does system partition exist in hard disk drive to be replaced?
No
Is the source disk for creating mirror?
Yes
No
Yes
Yes
See Procedure 3.
See Procedure 1.
See Procedure 2.
A
END

Procedure 1

1. Shutdown the CPU blade system and turn off the power of the CPU blade.
2. Replace the hard disk drive.
3. Set up the system again.

IMPORTANT: Because the data cannot be recovered in this procedure, take the proper action such as data backup if necessary.

Procedure 2

1. Delete all the volumes and partitions on the hard disk drive to be removed.

   To delete volumes and partitions, select [Program] – [Administrative Tool] – [Disk Management] in [Computer Management] from the [Start] menu.

   Select [Delete volume]/[Delete partition] from the menu appearing by right-clicking on volume/partition.

   IMPORTANT:

   - Delete volumes and partitions carefully. Note that volumes and partitions may not be deleted from a normal disk.
   - The volume and partition deletion disables the data to be recovered. Take the proper action such as data backup if necessary.

2. Shutdown the CPU blade system and turn off the power of the CPU blade.
3. Remove the hard disk drive.
4. Install the hard disk drive.
5. Turn on the power of the CPU blade.
6. Delete the removed disk.

   To delete the disk, select [Program] – [Administrative Tool] – [Disk Management] in [Computer Management] from the [Start] menu.

   Right-click the removed disk in the [Disk Management] screen to select [Delete disk].

7. Import the installed hard disk drive.

   To import the disk, select [Program] – [Administrative Tool] – [Disk Management] in [Computer Management] from the [Start] menu.

   The installed disk has a different format. Right-click on the installed disk and select [Import disk of different format].

8. If NEC ESMPRO Agent is used, reset the hard disk drive (see "Reset of Hard Disk Drive").

Procedure 3

1. Release the mirror.

   To release the mirror, select [Program] – [Administrative Tool] – [Disk Management] in [Computer Management] from the [Start] menu.

   Select [Release mirror] from the menu appearing by right-clicking on the mirror volume.

2. Delete all the volumes on the hard disk drive to be removed.

   Delete the volumes by [Disk Management] in the same way as procedure 1.

   Select [Delete volume] from the menu appearing by right-clicking on the volume.

   IMPORTANT:

   - Delete volumes carefully. Note that volumes may not be deleted from a normal disk.
   - The volume deletion disables the data to be recovered. Take the proper action such as data backup if necessary.

3. Shutdown the CPU blade system and turn off the power of the CPU blade.
4. Remove the hard disk drive.
5. Install a hard disk drive.
6. Turn on the power of the CPU blade.
7. Delete the removed disk.

   To delete the disk, select [Program] – [Administrative Tool] – [Disk Management] in [Computer Management] from the [Start] menu.

   Right-click on the removed disk in the [Disk Management] screen and select [Remove disk].

8. Import the installed hard disk drive.

   To import the disk, select [Program] – [Administrative Tool] – [Disk Management] in [Computer Management] from the [Start] menu.

   The installed disk has a different format. Right-click on the installed disk and select [Import disk of different format].

9. Add the mirror.

   To add the mirror, select [Program] – [Administrative Tool] – [Disk Management] in [Computer Management] from the [Start] menu.

   Select [Add mirror] from the menu appearing by right-clicking on the volume to which the mirror is desired to be added.

10. If NEC ESMPRO Agent is used, reset the hard disk drive (see "Reset of Hard Disk Drive").

Reset of Hard Disk Drive

Reset the management information on the replaced hard disk drive in the following procedure.

1. Select [Settings] – [Control Panel] – [NEC ESMPRO Agent] from the [Start] menu.
   [NEC ESMPRO Agent Ver.XXX Properties] is started.
2. Click on the [General] tab in [NEC ESMPRO Agent Ver.XXX Properties].
3. Select [Storage Setting…] in the [General] tab.
   [Storage] is started.
4. Click on the [Reset] tab in [Storage].
5. After selecting the replaced hard disk drive in [Hard disk list], click on [OK].
   The management information on the replaced hard disk drive is reset.
6. Close the dialog box.
7. Close [NEC ESMPRO Agent Ver.XXX Properties].

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Appendix A

Specifications

Item		NEC Express5800/B120a		
		N8400-083F	**N8400-084F**	**N8400-085F**
CPU	Type	Intel® Xeon® processor E5502	Intel® Xeon® processor X5550	Intel® Xeon® processor L5520
	Clock	1.86GHz	2.66GHz	2.26GHz
	FSB	4.8GT/s	6.4GT/s	5.86GT/s
	2nd Cache	4MB	8MB	
	Standard	1		
	Maximum	2		
Chipset		Intel® 5500 chipset		
Memory	Standard	None (Required option)		
	Maximum	64GB (when additional CPU is installed)		
	Adding time	8 (when additional CPU is installed)		
	Memory module	DDR3-1066 Registered DIMM DDR3-1333 Unbuffered DIMM		
	Error check	ECC		
Hard disk drive	Standard	None		
	Maximum	293GB (146.5GB×2)		
Graphics (VRAM)		640×480 to 1280×1024 (VRAM 8MB)		
Auxiliary input device	Floppy disk drive	Option (USB)		
	CD/DVD-ROM drive	Option (USB)		
Mezzanine card slot	Type 1	2 slots (when Mezzanine Card Type 2 is not used)		
	Type 2	1 slot		
LAN interface		1000Base-T × 2		
External interface		SUV connector (to be connected to the front panel, serial ×1, VGA×1, USB×2) ×1		
External dimensions (mm)		181 (H) × 516 (D) × 53 (W)		
Weight		6.0 kg Max.		
Power supply		+12Vdc and +5VS (supplied from the Blade Enclosure)		
Power consumption (+12Vdc)		361 W	420 W	380 W
Environmental requirements	Temperature	10 to 35°C		
	Humidity	20 to 80% RH (no condensation)		

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Appendix B

Installing the Operating System

SETUP AND RE-SETUP OF CPU BLADE OF DISKLESS MODEL

Local Installation

Before the installation, make sure that the CPU blade is connected with the keyboard, display unit, DVD-ROM drive and floppy disk drive. If any device is not connected, always connect it to the CPU blade.

Notes

Before starting the local installation, read the notes described here carefully.

SAN Boot

If you use SAN boot, confirm BIOS Setup before setup Windows.

- If you use SAN boot with N8403-027, set following BIOS setting.

  [Advanced] → [Peripheral Configuration] → [SATA AHCI] and [SATA RAID] change to [Disabled].

- If you use SAN boot with N8403-026, set following BIOS setting.

  [Advanced] → [PCI Configuration] → Option ROM Scan [Enabled] → [Disabled]

> **IMPORTANT:** After executing [Load Setup Defaults], set this BIOS setting. If you do not set up BIOS setting, you could not install Windows.

Key Entry

Conduct key entries while the access lamp on the USB floppy disk drive is off (or the floppy disk is not accessed).

System Update

If the system configuration is modified, always provide the system update by using NEC EXPRESSBUILDER DVD shipped with the system. See Chapter 6 for details.

Installing on the Mirrored Volume (Windows Server 2008)

When re-installing the OS to a hard disk drive which has been upgraded to Dynamic Disk, only the simple dynamic volume is available for installation.

If you want to install the OS on a volume that is mirrored using [Disk Management], invalidate the mirroring and reset to the basic disk before the installation, and validate the mirroring again after the installation.

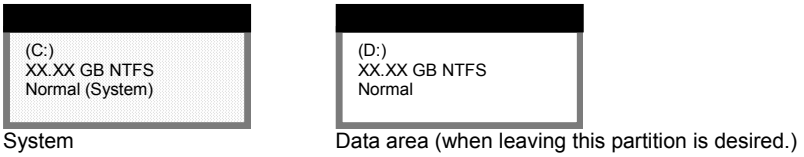
You can create, invalidate, or delete the mirror volume by using [Disk Management] in [Computer Management].

Re-installation to Dynamic Disk

When the system is Windows Server 2003 x64 Edition or Windows Server 2003

In the re-installation to the hard disk drive upgraded to a dynamic disk, one or more partitions other than the partition in which OS is to be installed may exist and you may desire to leave the partitions. If so, note the followings.

<Example>



- As the partition in which OS will be installed, select the partition in which OS has been installed previously.
- Select "Use current file system as it is (no change)" for the format of the OS partition.

About the System Partition Size

When the system is Windows Server 2008 64-bit (x64) Edition:

Required partition size =
size required to install OS + paging file size + dump file size + application size

Size required to install OS	= 11,600MB (Full Installation) or = 4,100MB (Server Core Installation)
Paging file size (recommended)	= Installed memory size x 1.5
Dump file size	= Installed memory size + 300MB
Application size	= Required size

IMPORTANT:

- The above-mentioned paging file size is recommended for collecting debug information (memory dump). The paging file with initial size large enough to store the dump file in the boot drive is required. Correct debug information might not be able to be collected due to virtual memory shortage when the paging file is insufficient, so set an enough size of the paging file with the entire system.
- Regardless of the size of the mounted memory, or the Write debugging information (type of memory dump), the maximum size of the dump file is 'The size of the mounted memory + 300MB'.
- If you install any application program or the like, add necessary space to the partition to install these programs.

Example:

The partition size required for a system with an installed memory size of 512 MB and a full installation of the operating system:

11,600MB + (512MB x 1.5) + (512MB + 300MB) + application size
= 13,180MB + application size.

If the provided partition size is smaller than that required to install the OS and paging file, expand the partition size or utilize a larger disk. If your system does not have a sufficient dump file size, divide the required file space into multiple disks by performing the steps below:

1. Set the system partition size to a size sufficient to install the OS and paging file.
2. See "Setting for Solving Problems" to write the debug information of the dump file onto another disk.

If there is not enough disk space to write the debug information, add another disk for the dump file.

When the system is Windows Server 2008 32-bit (x86) Edition

Required partition size =
size required to install OS + paging file size + dump file size + application size

Size required to install OS	= 6,300MB (Full Installation) or = 2,200MB (Server Core Installation)
Paging file size (recommended)	= Installed memory size x 1.5
Dump file size	= Installed memory size + 300MB
Application size	= Required size

IMPORTANT:

- The above-mentioned paging file size is recommended for collecting debug information (memory dump). The paging file with initial size large enough to store the dump file in the boot drive is required. Correct debug information might not be able to be collected due to virtual memory shortage when the paging file is insufficient, so set an enough size of the paging file with the entire system.
- The maximum paging file size which can be set on one partition is 4095MB. If the above paging file size exceeds 4095MB, specify 4095MB for the paging file size.
- The maximum dump file size for the system with more than 2GB memory mounted is '2048MB + 300MB'.
- If you install any application program or the like, add necessary space to the partition to install these programs.

Example:

The partition size required for a system with an installed memory size of 512 MB and a full installation of the operating system:

6,300MB + (512MB x 1.5) + 512MB + 300MB + application size
= 7,880MB + application size.

If the partition where the operating system is installed is smaller than that required to install the OS and paging file, expand the partition size or utilize a larger disk. If your system does not have a sufficient dump file size, divide the required file space into multiple disks by performing the steps below:

1. Set the partition size to a size sufficient to install the OS and paging file.
2. See "Setting for Solving Problems" to write the debug information of the dump file onto another disk.

If there is not enough disk space to write the debug information, add another disk for the dump file.

When the system is Windows Server 2003 x64 Editions:

The size for the partition that the system is to be installed can be calculated from the following formula.

Size necessary to install the system	+ Paging File Size + Dump File Size + Application Size
Size necessary to install the system	= 4100MB (Windows Server 2003 x64 Editions) = 4100MB (Windows Server 2003 x64 Editions with Service Pack2) = 5900MB (Windows Server 2003 x64 Editions + Service Pack2 CD-ROM)
Paging File Size (Recommended)	= Mounted Memory Size * 1.5
Dump file Size	= Mounted Memory Size + 1MB
Application Size	= Required Size

IMPORTANT:

- The above-mentioned paging file size is recommended for collecting debug information (memory dump). The paging file with initial size large enough to store the dump file in the boot drive is required. Correct debug information might not be able to be collected due to virtual memory shortage when the paging file is insufficient, so set an enough size of the paging file with the entire system.
- Regardless of the size of the mounted memory, or the Write debugging information (type of memory dump), the maximum size of the dump file is 'The size of the mounted memory + 1MB'.
- If you install any application program or the like, add necessary space to the partition to install these programs.

For example, if the mounted memory size is 512MB, the partition size will be calculated by the above formula as follows:

4100MB + (512MB * 1.5) + (512MB + 1MB) + Application Size
= 5381MB + Application Size

Dividing into the partition of the recommended size into multiple disks as written below will solve problem that it cannot be reserved in one disk.

1. Set the "Size required for installation + Paging file size".
2. See Chapter 5 and set that debugging information (equivalent to the dump file size) is to be written to a separate disk.

   (If the disk does not have enough free space to enable the dump file size to be written, then after installing the system using the "Size required for installation + Paging file size", install an additional new disk.)

When the system is Windows Server 2003:

The size for the partition that the system is to be installed can be calculated from the following formula.

Size necessary to install the system	+ Paging File Size + Dump File Size + Application Size
Size necessary to install the system	= 3500MB = 3500MB (Windows Server 2003 R2 with Service Pack2) = 5300MB (Windows Server 2003 R2 + Service Pack2 CD-ROM)
Paging File Size (Recommended)	= Mounted Memory Size * 1.5
Dump file Size	= Mounted Memory Size + 1MB
Application Size	= Required Size

IMPORTANT:

- The above-mentioned paging file size is recommended for collecting debug information (memory dump). The paging file with initial size large enough to store the dump file in the boot drive is required. Correct debug information might not be able to be collected due to virtual memory shortage when the paging file is insufficient, so set an enough size of the paging file with the entire system.
- The maximum paging file size which can be set on one partition is 4095MB. If the above paging file size exceeds 4095MB, specify 4095MB for the paging file size.
- The maximum dump file size for the system with more than 2GB memory mounted is '2048MB + 12MB'.
- If you install any application program or the like, add necessary space to the partition to install these programs.

For example, if the mounted memory size is 512MB, the partition size will be calculated by the above formula as follows:

3500MB + (512MB * 1.5) + (512MB + 12MB) + Application Size
= 4792MB + Application Size

Dividing into the partition of the recommended size into multiple disks as written below will solve problem that it cannot be reserved in one disk.

1. Set the "Size required for installation + Paging file size".
2. See Chapter 5 and set that debugging information (equivalent to the dump file size) is to be written to a separate disk.

   (If the disk does not have enough free space to enable the dump file size to be written, then after installing the system using the "Size required for installation + Paging file size", install an additional new disk.)

Optional Board Supported by NEC EXPRESSBUILDER

The NEC EXPRESSBUILDER DVD attached to your system supports the following mass storage controllers for installation.

> **NOTE:** If you want to install the other boards by using a driver floppydisk ("OEM-Disk for Mass storage device"), except ones listed below, see "Installing with the OEM-Disk for Mass storage device" and "Installing Optional Mass Storage Driver" of "Parameter File Creator" in Chapter 6.

- Controllers supporting installation of OS with Express Setup
  - N8403-026 (RAID Controller)
  - N8403-027 (SATA Interface card)
  - N8403-018 FibreChannel Controller*
- Other controllers
  - N8403-018 FibreChannel Controller*

  * Option

Setup Procedure

The following describes the procedure of installing Windows Server 2003 x64 Editions/Windows Server 2003 with local installation.

> **IMPORTANT:** Before starting the setup, always see the notes described earlier in this chapter. The partition creation and the installation to dynamic disks are described.

Items Required for Local Installation

Before starting the job, prepare the following items including disks and manuals:

- DVD-ROM drive
- Floppy disk drive
- NEC EXPRESSBUILDER DVD
- For Windows Server 2008
  - Microsoft Windows Server 2008 Standard (DVD-ROM)
  - Microsoft Windows Server 2008 Enterprise (DVD-ROM)
- For Windows Server 2003 R2 x64 Editions
  - Microsoft Windows Server 2003 R2 Standard x64 Edition DISC 1 (CD-ROM)
    Microsoft Windows Server 2003 R2 Standard x64 Edition DISC 2 (CD-ROM)
  - Microsoft Windows Server 2003 R2 Enterprise x64 Edition DISC 1 (CD-ROM)
    Microsoft Windows Server 2003 R2 Enterprise x64 Edition DISC 2 (CD-ROM)
  - Windows Server 2003 x64 Edition OEM-DISK
  - Windows Server 2003 x64 Edition Service Pack 2 (CD-ROM)
- For Windows Server 2003 R2
  - Microsoft Windows Server 2003 R2 Standard Edition DISC 1 (CD-ROM)
    Microsoft Windows Server 2003 R2 Standard Edition DISC 2 (CD-ROM)
  - Microsoft Windows Server 2003 R2 Enterprise Edition DISC 1 (CD-ROM)
    Microsoft Windows Server 2003 R2 Enterprise Edition DISC 2 (CD-ROM)
  - Windows Server 2003 OEM-DISK
  - Windows Server 2003 Service Pack 2 (CD-ROM)
- First Step Guide
- User's Guide (this manual)

Creating "Windows Server 2003 x64 Edition OEM-Disk for EXPRESSBUILDER"

Before installing, create Windows Server 2003 x64 Edition OEM-Disk for EXPRESSBUILDER.

> **NOTE:** If you have already "Windows Server 2003 x64 Edition OEM-Disk for EXPRESSBUILDER" for NEC Express5800 Server which you are going to install Windows Server 2003 x64 Editions, you do not need to create it again.

You can create Windows Server 2003 x64 Edition OEM-Disk for EXPRESSBUILDER with the following two procedures.

Create from the menu which appears when running NEC Express5800 Server with NEC EXPRESSBUILDER.

If you have only NEC Express5800 Server to create Windows Server 2003 x64 Edition OEM-Disk for EXPRESSBUILDER, use this procedure.

If Windows Server 2003 can be operated on NEC Express5800 Server, you can use the other procedure described later.

Follow the steps below.

1. Prepare one 3.5-inch floppy disk.
2. Turn on your NEC Express5800 Server.
3. Insert the NEC EXPRESSBUILDER DVD into the optical disk drive of the server.
4. Press the RESET switch or press **Ctrl**, **Alt** and **Delete** to reboot the server. (You may also turn off and then on again to reboot the server.)

   The system will boot from the DVD-ROM and NEC EXPRESSBUILDER starts.
5. Select [Create the OEM-Disk for Windows] from [Tools Menu] step.
6. Insert a floppy disk into the floppy disk drive
7. Select [Create a Windows Server 2003 x64 Editions OEM-Disk for EXPRESSBUILDER] at [Create OEM-Disk] and click [Perform].
8. Windows Server 2003 x64 Edition OEM-Disk for EXPRESSBUILDER will be created.

   Write-protect and attach a label, then keep it safely.

Create from [Autorun Menu]

This menu requires Microsoft Windows XP, Vista or Windows Server 2003 (or later).

You can create Windows Server 2003 x64 Edition OEM-Disk for EXPRESSBUILDER from [Autorun Menu], if you have the computer on which the above operating systems operate.

Follow the steps below.

1. Prepare one 3.5-inch floppy disk.
2. Start the Operating System.
3. Insert the NEC EXPRESSBUILDER DVD into the optical disk drive of the server.

   The Menu will appear.
4. Insert the floppy disk into the floppy disk drive.
5. Click [Create drive disk] and select [OEM-Disk for Windows Server 2003 x64 Edition].

   NOTE: You can do the same operation with the menu appeared by the Right-click.
6. Windows Server 2003 x64 Edition OEM-Disk for EXPRESSBUILDER will be created.

   Write-protect and attach a label, then keep it safely.

Creating "Windows Server 2003 OEM-Disk for EXPRESSBUILDER"

Before installing, create Windows Server 2003 OEM-Disk for EXPRESSBUILDER.

> **NOTE:** If you have already "Windows Server 2003 OEM-Disk for EXPRESSBUILDER" for NEC Express5800 Server which you are going to install Windows Server 2003, you do not need to create it again.

You can create Windows Server 2003 OEM-Disk for EXPRESSBUILDER with the following two procedures.

Create from the menu which appears when running NEC Express5800 Server with NEC EXPRESSBUILDER

If you have only NEC Express5800 Server to create Windows Server 2003 OEM-Disk for EXPRESSBUILDER, use this procedure.

If Windows Server 2003 or Windows can be operated on NEC Express5800 Server, you can use the other procedure described later.

Follow the steps below.

1. Prepare one 3.5-inch floppy disk.
2. Turn on your NEC Express5800 Server.
3. Insert the NEC EXPRESSBUILDER DVD into the optical disk drive of the server.
4. Press the RESET switch or press **Ctrl**, **Alt** and **Delete** to reboot the server. (You may also turn off and then on again to reboot the server.)

   The system will boot from the DVD-ROM and NEC EXPRESSBUILDER starts.
5. Select [Create the OEM-Disk for Windows] from [Tools Menu] step.
6. Insert a floppy disk into the floppy disk drive
7. Select [Create a Windows Server 2003 OEM-Disk for EXPRESSBUILDER] at [Create OEM-Disk] and click [Perform].
8. Windows Server 2003 OEM-Disk for EXPRESSBUILDER will be created.

   Write-protect and attach a label, then keep it safely.

Create from [Autorun Menu]

This menu requires Microsoft Windows XP, Vista or Windows Server 2003 (or later).

You can create Windows Server 2003 OEM-Disk for EXPRESSBUILDER from [Autorun Menu], if you have the computer on which the above operating systems operate.

Follow the steps below.

1. Prepare one 3.5-inch floppy disk.
2. Start the Operating System.
3. Insert the NEC EXPRESSBUILDER DVD into the optical disk drive of the server.

   The Menu will appear.
4. Insert the floppy disk into the floppy disk drive.
5. Click [Create drive disk] and select [OEM-Disk for Windows Server 2003].

   NOTE: You can do the same operation with the menu appeared by the Right-click.
6. Windows Server 2003 OEM-Disk for EXPRESSBUILDER will be created.

   Write-protect and attach a label, then keep it safely.

Installation of Windows Server 2008

Install Windows Server 2008 in the following procedure.

1. Turn on your system.

   IMPORTANT: To install Windows Server 2008, you may need to update BIOS. To check if your system needs a BIOS update, go to: http://www.nec.com/express/.

2. Insert the Windows Server 2008 DVD-ROM into your DVD-ROM drive.

3. Restart the system.
   To restart the system, press **Ctrl** + **Alt** + **Del** or turn off the system once, and then turn it on again.

   IMPORTANT: When prompted to [press any key to boot from CD or DVD], press **Enter** while the message is displayed. If the Windows installation screen (shown in step 4) does not appear, turn off the system, and then turn it on again.

   The DVD-ROM starts. A message "Windows is loading files …" appears.

4. Select a language and other options from the drop-down lists, and then click [Next].

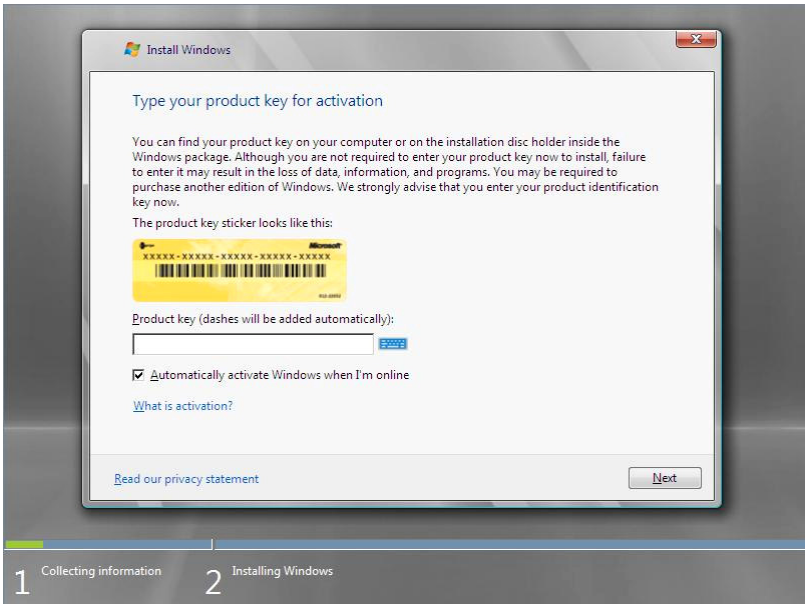
Install Windows
Windows Server 2008
Language to install: English
Time and currency format: English (United States)
Keyboard or input method: US
Enter your language and other preferences and click "Next" to continue.
Copyright © 2007 Microsoft Corporation. All rights reserved.
Next

5. Click the [Install now] button.

The installation starts.

Install Windows
Windows Server 2008
Install now
What to know before installing Windows
Repair your computer
Copyright © 2007 Microsoft Corporation. All rights reserved.

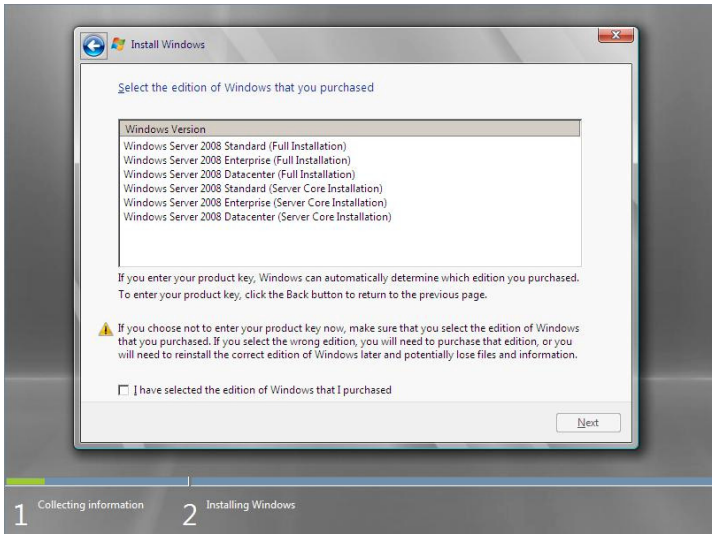
6. Enter your product key, and then click [Next].


Install Windows
Type your product key for activation
You can find your product key on your computer or on the installation disc holder inside the Windows package. Although you are not required to enter your product key now to install, failure to enter it may result in the loss of data, information, and programs. You may be required to purchase another edition of Windows. We strongly advise that you enter your product identification key now.
The product key sticker looks like this:
XXXXX-XXXXX-XXXXX-XXXXX-XXXXX
Product key (dashes will be added automatically):
Automatically activate Windows when I'm online
What is activation?
Read our privacy statement
Next
1 Collecting information
2 Installing Windows

7. Select the edition of the Windows operating system that you purchased.

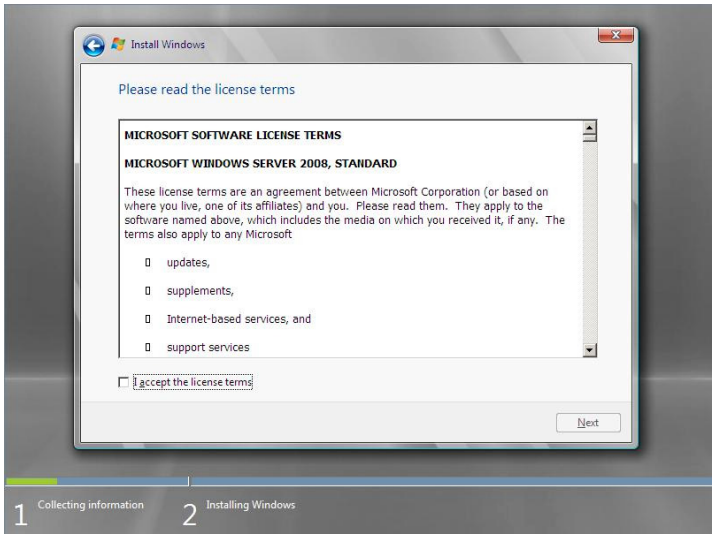
Select [I have selected the edition of Windows that I purchased], and then click [Next].

You will see only possible editions that have been determined by Windows based on the key you entered in step 6.


Install Windows
Select the edition of Windows that you purchased
Windows Version
Windows Server 2008 Standard (Full Installation)
Windows Server 2008 Enterprise (Full Installation)
Windows Server 2008 Datacenter (Full Installation)
Windows Server 2008 Standard (Server Core Installation)
Windows Server 2008 Enterprise (Server Core Installation)
Windows Server 2008 Datacenter (Server Core Installation)
If you enter your product key, Windows can automatically determine which edition you purchased.
To enter your product key, click the Back button to return to the previous page.
If you choose not to enter your product key now, make sure that you select the edition of Windows that you purchased. If you select the wrong edition, you will need to purchase that edition, or you will need to reinstall the correct edition of Windows later and potentially lose files and information.
I have selected the edition of Windows that I purchased
Next
1 Collecting information
2 Installing Windows

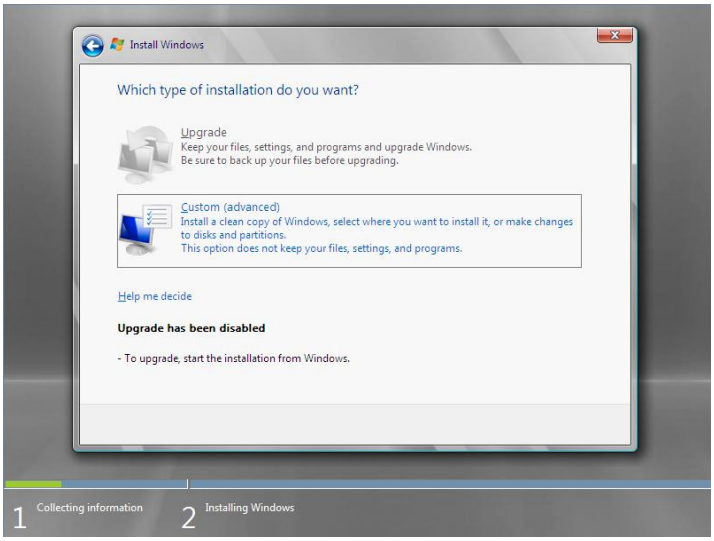
NOTE: The Windows versions listed on the screen vary depending on the Windows Server 2008 DVD-ROM you are using.

8. Read the license terms carefully. If you agree, select [I accept the license terms], and then click [Next].


Install Windows
Please read the license terms
MICROSOFT SOFTWARE LICENSE TERMS
MICROSOFT WINDOWS SERVER 2008, STANDARD
These license terms are an agreement between Microsoft Corporation (or based on where you live, one of its affiliates) and you. Please read them. They apply to the software named above, which includes the media on which you received it, if any. The terms also apply to any Microsoft
updates,
supplements,
Internet-based services, and
support services
I accept the license terms
Next
1 Collecting information
2 Installing Windows

9. Select the type of installation you want.

[Custom (advanced)] is selected below.


Install Windows
Which type of installation do you want?
Upgrade
Keep your files, settings, and programs and upgrade Windows.
Be sure to back up your files before upgrading.
Custom (advanced)
Install a clean copy of Windows, select where you want to install it, or make changes to disks and partitions.
This option does not keep your files, settings, and programs.
Help me decide
Upgrade has been disabled
- To upgrade, start the installation from Windows.
1 Collecting information
2 Installing Windows

10. The screen of "Where do you want to install Windows?" is displayed.

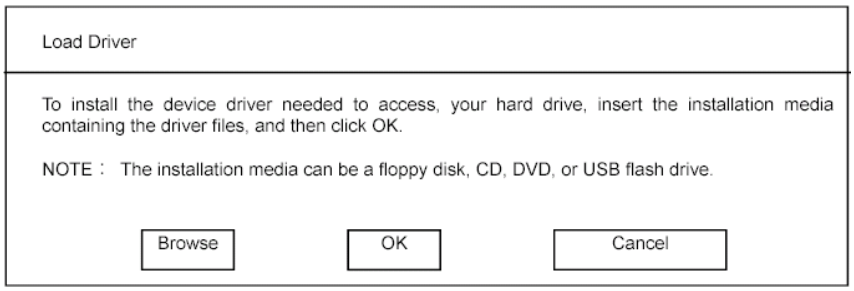
– If the N8403-026 (RAID Controller) is connected, go to Step 11.

– If the N8403-027 (SATA Interface card) is connected, go to Step 12.

– If the N8403-027 (SATA Interface card) is connected and SAN boot is used, go to Step 14.

11. You will be asked, "Where do you want to install Windows?".

Select [Load Driver], and then click [Browse].


Load Driver
To install the device driver needed to access, your hard drive, insert the installation media containing the driver files, and then click OK.
NOTE : The installation media can be a floppy disk, CD, DVD, or USB flash drive.
Browse
OK
Cancel

The folder reference dialog box appears. Select a path to the folder in the NEC EXPRESSBUILDER DVD, and then click [OK].

– Windows Server 2008 64-bit(x64)Edition :

<drive letter>:\003\win\winnt\oemfd\ws2008x64\fd1\megasas

– Windows Server 2008 32-bit(x86)Edition :

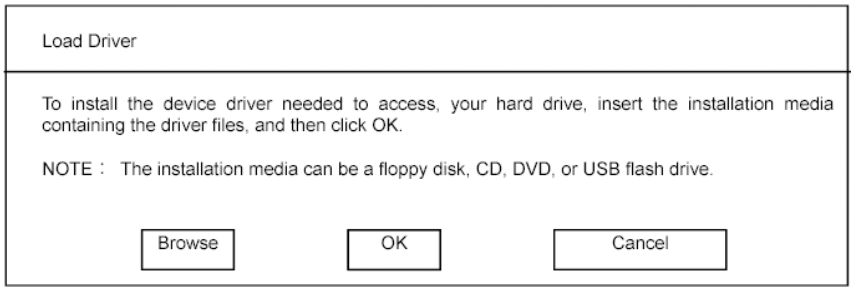
<drive letter>:\003\win\winnt\oemfd\ws2008\fd1\megasas

After you select the path, a list of drivers is displayed. Select the following driver, and then click [OK]. Go to step 13.

[LSI Logic MegaRAID SAS PCI Express ROMB]

12. You will be asked, "Where do you want to install Windows?".

Select [Load Driver], and then click [Browse].


Load Driver
To install the device driver needed to access, your hard drive, insert the installation media containing the driver files, and then click OK.
NOTE : The installation media can be a floppy disk, CD, DVD, or USB flash drive.
Browse
OK
Cancel

The folder reference dialog box appears.

- If the LSI Embedded MegaRAID™ is used, select a path to the folder in the NEC EXPRESSBUILDER DVD, and then click [OK].
  - Windows Server 2008 64-bit (x64) Edition :

    <drive letter>: \003\win\winnt\oemfd\ws2008x64\fd1\megasr1
  - Windows Server 2008 32-bit (x86) Edition :

    <drive letter>: \003\win\winnt\oemfd\ws2008\fd1\megasr1

  After you select the path, a list of drivers is displayed. Select the following driver, and then click [OK]. Go to step 13.

  [LSI Embedded MegaRAID]
- If the LSI Embedded MegaRAID™ is not used,
  - Windows Server 2008 64-bit(x64)Edition :

    <drive letter>: \003\win\winnt\oemfd\ws2008x64\fd1\iastor
  - Windows Server 2008 32-bit(x86)Edition :

    <drive letter>: \003\win\winnt\oemfd\ws2008\fd1\iastor

  After you select the path, a list of drivers is displayed. Select the following driver, and then click [OK]. Go to step 13.

  [Intel(R) ICH10R SATA AHCI Controller]

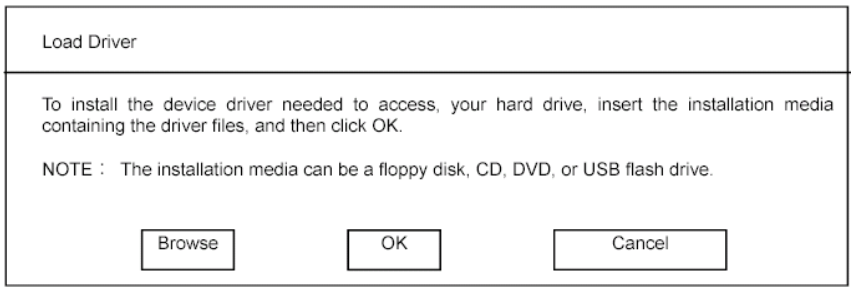
13. The screen of "Where do you want to install Windows?" is displayed.

If the N8403-018 FibreChannel Controller is connected, go to Step 14.

If the N8403-018 FibreChannel Controller is not connected, go to Step 15.

14. You will be asked, "Where do you want to install Windows?".

Select [Load Driver], and then click [Browse].


Load Driver
To install the device driver needed to access, your hard drive, insert the installation media containing the driver files, and then click OK.
NOTE： The installation media can be a floppy disk, CD, DVD, or USB flash drive.
Browse
OK
Cancel

The folder reference dialog box appears.

Select a path to the folder in the NEC EXPRESSBUILDER DVD, and then click [OK].

– Windows Server 2008 64-bit (x64) Edition :

<drive letter>: \003\win\winnt\oemfd\ws2008x64\fd1\elxstor

– Windows Server 2008 32-bit (x86) Edition :

<drive letter>: \003\win\winnt\oemfd\ws2008\fd1\elxstor

After you select the path, a list of drivers is displayed. Select the following driver, and then click [OK]. Go to step 15.

[Emulex Light Pulse HBA - Storport Miniport Driver]

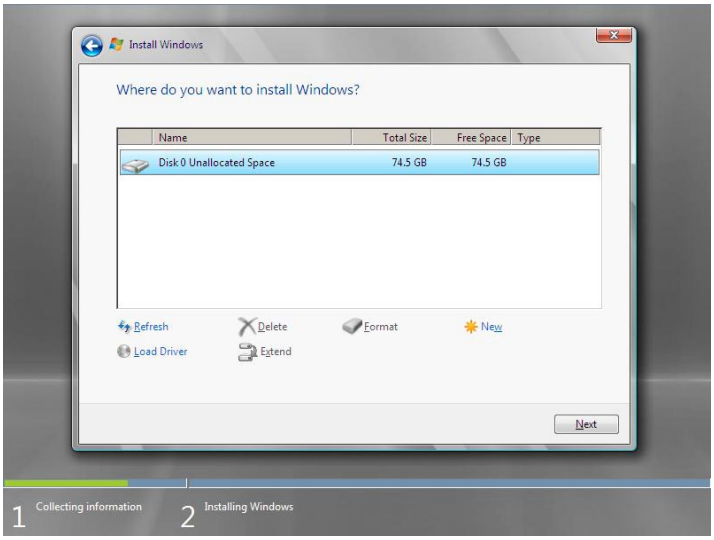
15. Select the disk where a partition will be created, and then click [Drive Option].

IMPORTANT: If the partition has already been created, go to step 18.

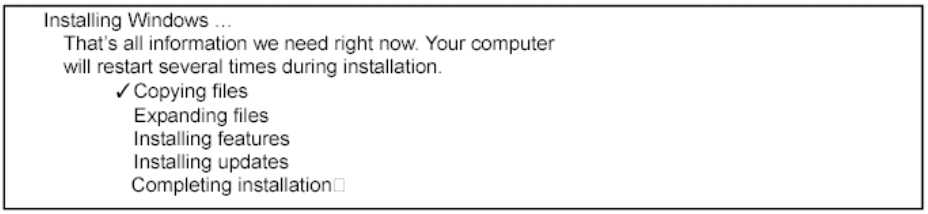
16. Click [New], enter a partition size, and then click [Apply].

17. Select the partition created in step 16, and then click [Format].

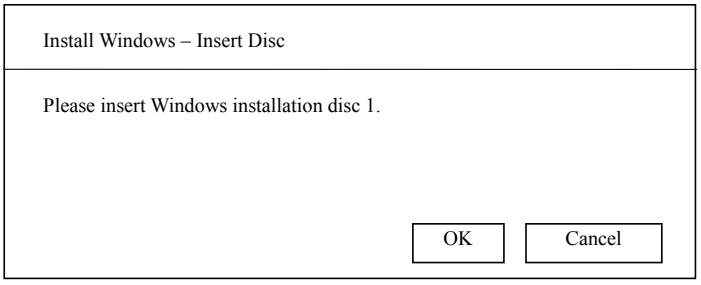
18. Select the partition created, and then click [Next].



When the following message appears, the installation starts automatically.


Installing Windows ...
That's all information we need right now. Your computer will restart several times during installation.
✓Copying files
Expanding files
Installing features
Installing updates
Completing installation

NOTE: If the disk drive contains NEC EXPRESSBUILDER DVD, you will be prompted to replace a media with that for OS installation. Insert the install media according to the on-screen message.



19. Log on to the system. The steps vary depending on the edition you selected in step 7.

If you have selected a full installation

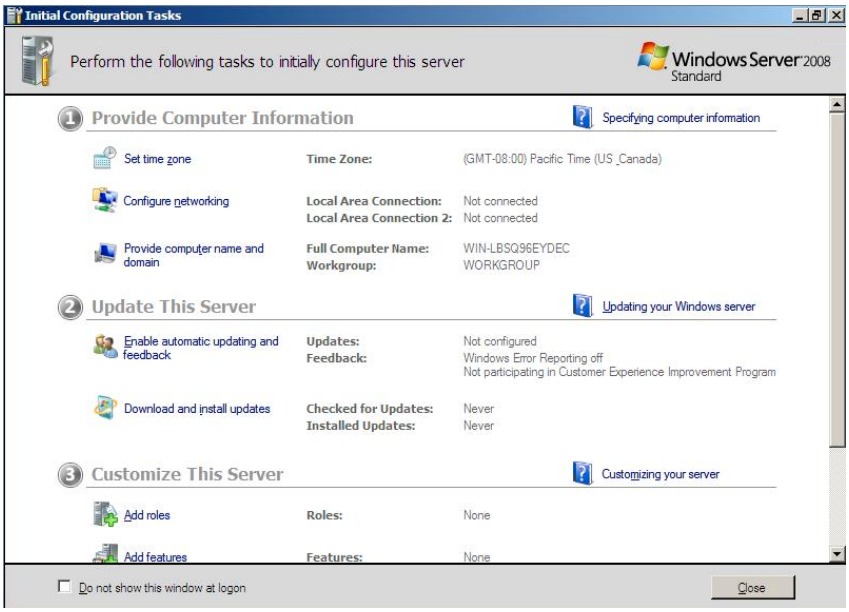
1. After a full installation of Windows Server 2008 is completed, the following dialog box will prompt you to set or change the password before you log on. Click [OK].

2. Change the password, and then click the button.

NOTE: The Windows Server 2008 password must combine uppercase letters, lowercase letters, and numbers.

3. When the following message appears, click [OK] to log on.

4. On the [Initial Configuration Tasks] window, enter user information.

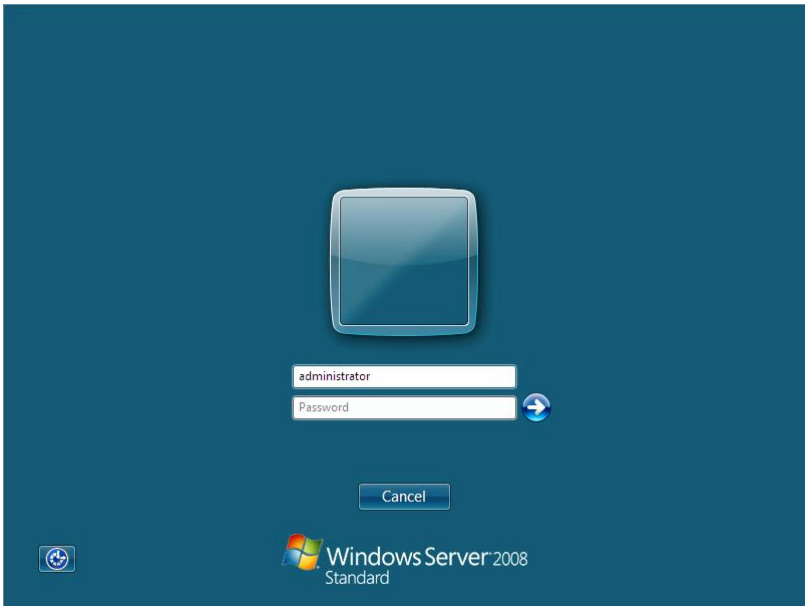


If you have selected a Server Core installation

1. After a Server Core installation of Windows Server 2008 is completed, press **Ctrl** + **Alt** + **Del**.

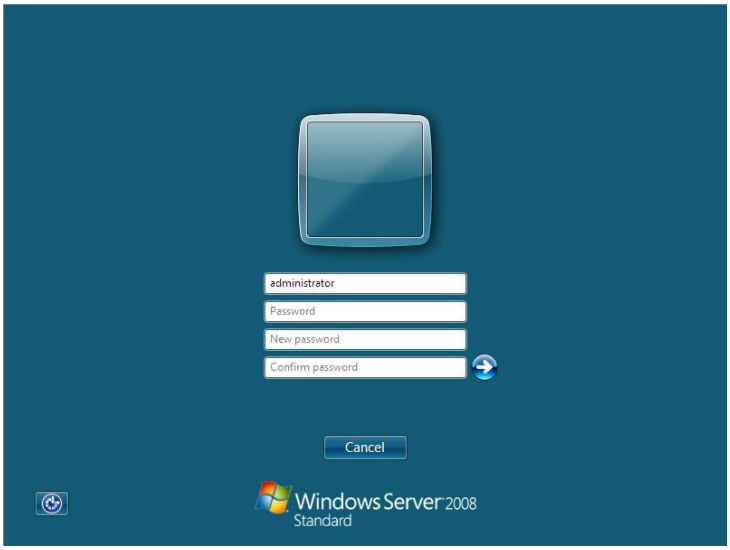
2. Select [Other User].

3. Log on to the system as an administrator.
You need not enter your password in this dialog box. Click the button.



4. Before you log on, you will be prompted to change the password. Click [OK].

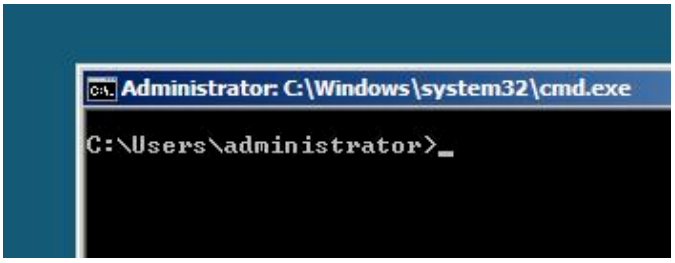
5. Change the password, and then click the button.



NOTE: The Windows Server 2008 password must combine uppercase letters, lowercase letters, and numbers.

6. When the following message appears, click [OK].

7. At the command prompt, enter user information.



NOTE: For more detailed procedure, see the "Microsoft Windows Server 2008 Step-By-Step Guide."

After installations is completed, be sure to execute the tasks described in "Setup of Device Driver (Normally Install in Server)" and "Updating the System" of this chapter.

Procedure for License Authentication

Product Key used in the procedure for license authentication should be matched with the COA label in which the product key contained in Windows Server 2008 is written.

NOTES:

- Execute the activation within 30 days. System may be locked after 30 days is passed.
- COA label may be attached to the main unit.

Installing and Setting Device Drivers

Follow these steps to install and configure the device drivers.

Installation of Windows Server 2003 R2 x64 Editions

This section explains how to perform a clean installation of Windows Server 2003 x64 Editions.

1. Turn on the power to start the CPU blade.
2. Insert the Windows Server 2003 x64 Edition CD-ROM into the USB DVD-ROM drive connected to the CPU blade.
3. Press **Ctrl** + **Alt** + **Delete** to reset the system.

   After a bootable operating system has been installed on the hard disk drive, press **Enter** while the message "Press any key to boot from CD..." is displayed at the top of the screen.

   If no bootable operating system exists on the hard disk drive, this step is unnecessary.

   The Windows Server 2003 x64 Editions setup screen will appear.

   If the screen is not displayed, **Enter** was not pressed properly.

   Begin after turning on the system power again.
4. Press **F6** in a few seconds when the window is in either of the following states.
   - "Setup is inspecting your computer's hardware configuration ..." or "Press F6 if you need to install a third party SCSI or RAID driver..." is displayed.
   - A screen with a solid blue background is displayed.

   IMPORTANT: There is no visible indication on screen when **F6** has been pressed.
5. When the following message is displayed, press **S**.

   ```
   Setup could not determine the type of one or more mass storage devices
   installed in your system, or you have chosen to manually specify an adapter.
   Currently, Setup will load support for the following mass storage devices.
   ```
6. Insert the Windows Server 2003 x64 Edition OEM-DISK for EXPRESSBUILDER into the floppy disk drive, and press **Enter**.

   ```
   Please insert the disk labeled
   manufacturer-supplied hardware support disk
   into Drive A:
   *Press ENTER when ready.
   ```

   A list of the drivers for Controller device is displayed.
   - If the N8403-026 (RAID Controller) is connected, go to Step 7.
   - If the N8403-027 (SATA Interface card) is connected, go to Step 8.
   - If the N8403-027 (SATA Interface card) is connected and SAN boot is used, go to Step 9.

7. Select the [LSI MegaRAID SAS RAID Controller Driver (Server 2003 for x64)] and press **Enter**.

   The screen of Step 5 is displayed. Go to Step 9.

8. Select the proper Controller and press **Enter**.

   The screen of Step 5 is displayed.

   – [LSI Embedded MegaRAID (Windows XP/2003 64-bit)]
   (When LSI Embedded MegaRAID™ is used.)

   – [Intel(R) ICH10R SATA AHCI Controller]
   (When LSI Embedded MegaRAID™ is not used.)

9. <If the N8403-018 FibreChannel Controller is connected>

   Press **S**.

   The screen of Step 6 is displayed. Press **Enter**, and go to Step 10.

   <If the N8403-018 FibreChannel Controller is not connected>

   Press **Enter**, go to Step 11.

10. Select the [Emulex LPX000 PCI Fibre Channel HBA] and press **Enter**.

    IMPORTANT: The following messages may be displayed. Press **S** to proceed.

    ```
    The driver you provided seems to be newer
    than the Windows default driver.
    Windows already has a driver that you can use
    for "Emulex LPX000 PCI Fibre Channel HBA"
    Unless the device manufacture prefers that
    you use the driver on the floppy disk, you
    should use the driver in Windows.
    ```

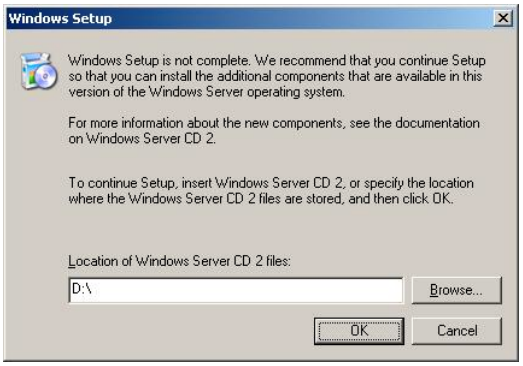
    The screen of Step 5 is displayed.

    Press **Enter**, go to Step 11.

11. When the following message is shown, press **Enter** to start "Welcome to Setup".

12. When the installation of Windows Server 2003 R2 x64 Edition has finished, the system reboots automatically.

13. The [Windows Setup] screen will be displayed after logged on to the system.


Windows Setup
Windows Setup is not complete. We recommend that you continue Setup so that you can install the additional components that are available in this version of the Windows Server operating system.
For more information about the new components, see the documentation on Windows Server CD 2.
To continue Setup, insert Windows Server CD 2, or specify the location where the Windows Server CD 2 files are stored, and then click OK.
Location of Windows Server CD 2 files:
D:\
Browse...
OK
Cancel

IMPORTANT: In this case, the [Windows Setup] screen may not be displayed.
Be sure to install Microsoft Windows Server 2003 R2 x64 Edition DISC 2 according to the following procedures.

14. Insert Microsoft Windows Server 2003 R2 x64 Edition DISC 2 CD-ROM into the USB DVD-ROM drive.

15. When the installation has completed, remove Microsoft Windows Server 2003 Edition DISC 2 CD-ROM from the USB DVD-ROM drive, and restart the system.

After installation is completed, be sure to execute the tasks described in "Setup of Device Driver (Normally Installed in Server)" and "Updating the System" of this chapter.

Procedure for License Authentication

Product Key used in the procedure for license authentication should be matched with the COA label in which the product key contained in Windows Server 2003 x64 Editions is written.

NOTES:

- Execute the activation within 30 days.
  System may be locked after 30 days is passed.
- COA label may be attached to the main unit.

Installing and Setting Device Drivers

Follow these steps to install and configure the device drivers.

Installation of Windows Server 2003 R2

This section explains how to perform a clean installation of Windows Server 2003.

1. Turn on the power to start the CPU blade.
2. Insert the Windows Server 2003 CD-ROM into the USB DVD-ROM drive.
3. Press **Ctrl** + **Alt** + **Delete** to reset the system.

   After a bootable operating system has been installed on the hard disk drive, press **Enter** while the message "Press any key to boot from CD..." is displayed at the top of the screen.

   If no bootable operating system exists on the hard disk drive, this step is unnecessary.

   The Windows Server 2003 setup screen will appear.

   If the screen is not displayed, **Enter** was not pressed properly.

   Begin after turning on the system power again.
4. Press **F6** in a few seconds when the window is in either of the following states.
   - "Setup is inspecting your computer's hardware configuration ..." or "Press F6 if you need to install a third party SCSI or RAID driver..." is displayed.
   - A screen with a solid blue background is displayed.

   IMPORTANT: There is no visible indication on screen when **F6** has been pressed.
5. When the following message is displayed, press **S**.

   ```
   Setup could not determine the type of one or more mass storage devices
   installed in your system, or you have chosen to manually specify an adapter.
   Currently, Setup will load support for the following mass storage devices.
   ```
6. Insert the Windows Server 2003 OEM-DISK for EXPRESSBUILDER into the floppy disk drive, and press **Enter**.

   ```
   Please insert the disk labeled
   manufacturer-supplied hardware support disk
   into Drive A:
   *Press ENTER when ready.
   ```

   A list of the drivers for Controller device is displayed.
   - If the N8403-026 (RAID Controller) is connected, go to Step 7.
   - If the N8403-027 (SATA Interface card) is connected, go to Step 8.
   - If the N8403-027 (SATA Interface card) is connected and SAN boot is used, go to Step 9.

7. Select the [LSI MegaRAID SAS RAID Controller Driver (Server 2003 32-bit)] and press **Enter**.

   The screen of Step 5 is displayed, Go to Step 9.

8. Select the proper Controller and press **Enter**.

   The screen of Step 5 is displayed.

   – [LSI MegaRAID SAS RAID Controller Driver (Server 2003 32-bit)]
   (When LSI Embedded MegaRAID™ is used.)

   – [Intel(R) ICH10R SATA AHCI Controller]
   (When LSI Embedded MegaRAID™ is not used.)

9. <If the N8403-018 FibreChannel Controller is connected>

   Press **S**.

   The screen of Step 6 is displayed. Press **Enter**, and go to Step 10.

   <If the N8403-018 FibreChannel Controller is not connected>

   Press **Enter**, go to Step 11.

10. Select the [Emulex LPX000 PCI Fibre Channel HBA] and press **Enter**.

    IMPORTANT: The following messages may be displayed. Press **S** to proceed.

    ```
    The driver you provided seems to be newer
    than the Windows default driver.
    Windows already has a driver that you can use
    for "Emulex LPX000 PCI Fibre Channel HBA"
    Unless the device manufacture prefers that
    you use the driver on the floppy disk, you
    should use the driver in Windows.
    ```

    The screen of Step 5 is displayed.

    Press **Enter**, go to Step 11.

11. When the following message is shown, press **Enter** to start "Welcome to Setup".

12. When the installation of Windows Server 2003 has finished, the system reboots automatically.

13. When Windows Server 2003 R2 has been installed, the [Windows Setup] screen will be displayed after logged on to the system.

Windows Setup
Windows Setup is not complete. We recommend that you continue Setup so that you can install the additional components that are available in this version of the Windows Server operating system.
For more information about the new components, see the documentation on Windows Server CD 2.
To continue Setup, insert Windows Server CD 2, or specify the location where the Windows Server CD 2 files are stored, and then click OK.
Location of Windows Server CD 2 files:
D:\
Browse...
OK
Cancel

IMPORTANT: In this case, the [Windows Setup] screen may not be displayed.
Be sure to install Microsoft Windows Server 2003 R2 DISC 2 according to the following procedures.

14. Insert Microsoft Windows Server 2003 R2 DISC 2 CD-ROM into the USB DVD-ROM drive.

Confirm the parameters and click [OK].

15. When the installation has completed, remove Microsoft Windows Server 2003 R2 DISC 2 CD-ROM from the DVD-ROM drive, and restart the system.

16. After installation is completed, be sure to execute the tasks described in "Setup of Device Driver (Normally Installed in Server)" and "Updating the System" of this chapter.

Procedure for License Authentication

Product Key used in the procedure for license authentication should be matched with the COA label in which the product key contained in Windows Server 2003 is written.

> **NOTE:** Execute the activation within 30 days. System may be locked after 30 days is passed.

Installing and Setting Device Drivers

Follow these steps to install and configure the device drivers.

REMOTE DESKTOP FOR MANAGEMENT

This section describes the necessary setting of the Remote Desktop for Management to use Windows Server 2008, Windows Server 2003 x64 Editions, or Windows Server 2003.

> **IMPORTANT:** The license for Sever Client Access with fee is not needed to use the Remote Desktop for Management.
> The Remote Desktop for Management enables to have two connections or less simultaneously.

Windows Server 2008

Full Installation

The setting process is as follows.

1. Click [Start] Menu and point [Control Panel] and click [System].
2. Click [Remote Setting].
3. Check [Allow connections from computers running any version of Remote Desktop] in the [Remote desktop] section, and click [OK].

Server Core Installation

Refer to the following technical information provided by Microsoft Corporation.

How to enable Remote Desktop on Windows Server 2008 Server Core.

> **NOTE:** Visit online support of Microsoft Corporation and obtain an information by entering a search keyword [KB555964].

Windows Server 2003 x64 Editions

The setting process is as follows.

> **IMPORTANT:** Set password for the Administrator account in order to use the Remote Desktop for Management.

1. Click [Start] Menu and point [Control Panel] and click [System].
2. Click [Remote] tab and check [Allow users to connect remotely to this computer] in the [Remote desktop] section, and click [OK].

Windows Server 2003

The setting process is as follows.

> **IMPORTANT:** Set password for the Administrator account in order to use the Remote Desktop for Management.

1. Click [Start] Menu and point [Control Panel] and click [System].
2. Click [Remote] tab and check [Allow users to connect remotely to this computer] in the [Remote desktop] section, and click [OK].

SETUP OF DEVICE DRIVER (NORMALLY INSTALLED IN SERVER)

For the installation and setup of each optional device driver, refer to the documentation shipped with the option.

PROSet

NOTES:

- All of the operation that related to Intel® PROSet is must be executed by administrator privileges. Operation by [Remote Desktop Connection] is prohibited.
  Without changing any parameter when opened the properties of adapter teaming, please click the [Cancel] button to close the dialog. Clicking the [OK] button will cause temporary loss of network connectivity.
- It is recommend to add [Network Monitor] at [Adding Services]. [Network Monitor] can monitor the frame (or the packet) that the computer installing [Network Monitor] sends or receives. This tool is valuable when analyzing network trouble. For information on how to install the tool, see the "Setting for Solving Problems" described later in this chapter.

PROSet is a utility that confirms the function of network contained in network driver.

Utilizing PROSet enables the following items:

- Confirm detailed information of the adapter.
- Diagnose loop back test, packet transmission test and so on.
- Setup of teaming.

Configuring several network adapters as one team provides the server a tolerant environment on any trouble and enhances throughput between the switches.

PROSet is necessary to utilize these features.

Follow the procedure below to install PROSet.

When the system is Windows Server 2008 64-bit (x64) Edition / Windows Server 2008 32-bit (x86) Edition

LAN drivers and PROSet are installed automatically by the System Update.

When the system is Windows Server 2003 x64 Editions / Windows Server 2003

1. Insert the NEC EXPRESSBUILDER DVD into the optical disk drive.

   If the autorun menu is displayed, close menu screen.

2. The [Windows Explorer] dialog starts.
   - The procedure in the case of the standard start menu

     Click Start menu and click [Windows Explorer].
   - The procedure in the case of the classic start menu

     Click Start menu, point to [Programs], [Accessories], and click [Windows Explorer].

3. Run "dxsetup.exe" in the following directory.
   - Windows Server 2003 x64 Editions:

     \003\win\winnt\w2k3amd\ma21\apps\prosetdx\winx64
   - Windows Server 2003 x86 Editions:

     \003\win\winnt\dotnet\ma21\apps\prosetdx\win32

   The [IntelR PROSet - InstallShield Wizard] dialog starts.
4. Click [Next].
5. Choose "I accept the terms in the license agreement" and click [Next].
6. Click [Next].
7. Click [Install].
8. When [InstallShield Wizard Completed] window is displayed, click [Finished].
9. Remove the NEC EXPRESSBUILDER DVD from the optical disk drive, restart the system.

Network Driver

IMPORTANT: The setting change of the link speed is not supported. Please do not change setting of the link speed.

Graphics Accelerator

Standard graphics accelerator drivers that are mounted will be installed automatically. The following is the procedure when it is necessary to install manually.

> **NOTE:** <Windows Server 2008>
>
> The graphics accelerator driver is supported only on a server running a full installation. Use VGA on a server running a Server Core installation.

1. Insert the NEC EXPRESSBUILDER DVD into the DVD-ROM drive.
2. Click Start menu, point to [Programs], [Accessories] and click [Windows Explorer].
3. Run "install.bat" in the following directory.

   Windows Server 2008 64-bit (x64) Edition:
   <DVD-ROM drive Letter>:\003\win\winnt\ws2008x64\video\install.bat

   Windows Server 2008 32-bit (x86) Edition:
   <DVD-ROM drive Letter>:\003\win\winnt\ws2008\video\install.bat

   Windows Server 2003 x64 Editions:
   <DVD-ROM drive Letter>:\003\win\winnt\w2k3amd\video\install.bat

   Windows Server 2003:
   <DVD-ROM drive Letter>:\003\win\winnt\dotnet\video\install.bat
4. Follow the message to continue the installation.

   If the dialog message "Digital Signature could not been found." appears, select [Yes] to continue.
5. Remove the NEC EXPRESSBUILDER DVD from the DVD-ROM drive, follow the direction on the screen and restart the system.

Installing Fibre Channel Controller Driver (N8403-018)

When the system is Windows Server 2008 64-bit (x64) Edition / Windows Server 2008 32-bit (x86) Edition

If you use the Fibre Channel Controller Driver (N8403-018), you do not need to install the driver manually. It is automatically installed by Windows Plug-and-Play

When the system is Windows Server 2003 x64 Editions / Windows Server 2003

If you use Fibre Channel Controller (N8403-018), update your system with NEC EXPRESSBUILDER DVD attached to your system.

The Fibre Channel Controller driver will be installed automatically.

Optional Network Board Driver

To use an optional Network Board (N8403-017/020/021/022), install the driver stored in NEC EXPRESSBUILDER DVD.

In case of utilizing (N8403-017/020/021/022) for Windows Server 2008 64-bit (x64) Edition / Windows Server 2008 32-bit (x86) Edition

LAN drivers and PROSet are installed automatically by the System Update.

In case of utilizing (N8403-017/020) for Windows Server 2003 x64 Editions

"DVD-ROM Drive Letter:\003\win\winnt\w2k3amd\ma21\pro1000\winx64"

In case of utilizing (N8403-017/020) for Windows Server 2003

"DVD-ROM Drive Letter:\003\win\winnt\dotnet\ma21\pro1000\win32"

If the procedure of installation is not clear, refer to the installation procedure described in the section "Installation of the Optional Network Board Driver".

Installation of the Optional Network Board Driver

When the system is Windows Server 2008 64-bit (x64) Edition / Windows Server 2008 32-bit (x86) Edition

LAN drivers and PROSet are installed automatically by the System Update.

When the system is Windows Server 2003 x64 Editions / Windows Server 2003

1. Start Device Manager.
2. Click [Network adapters] and double-click [(Network Adapter Name)].

   [(Network Adapter Name) Properties] appears.

   NOTE: [(Intel(R) PRO/1000...)] is the name of On-Board adapter. All other names show the Optional Network Board.

3. Click [Driver] tab and click [Update Driver...].

   [Hardware Update Wizard] appears.
4. Select the [Install from a list or specific location (Advanced)] radio button and click [Next].
5. Select the [Search for the best driver in these locations] radio button and check off the [Search removable media (floppy, CD-ROM...)] check box.
6. Check the [Include this location in the search] check box and when using [(N8403-017/020)], specify:

   In case of utilizing (N8403-017/020) for Windows Server 2003 x64 Editions

   "DVD-ROM Drive Letter:\003\win\winnt\w2k3amd\ma21\pro1000\winx64"

   In case of utilizing (N8403-017/020) for Windows Server 2003

   "DVD-ROM Drive Letter:\003\win\winnt\dotnet\ma21\pro1000\win32"

   Then click [Next].
7. Click [Finish].

Setup of Adapter Fault Tolerance (AFT)/Adaptive Load Balancing (ALB)

Adapter Fault Tolerance (AFT) is a feature that creates a group containing more than one adapter.

With this feature, when the working adapter gets any problem, the process on it is automatically transferred to the other adapter in the group.

Adaptive Load Balancing (ALB) is a feature that creates a group containing more than one adapter and enhances the throughput by operating packet transmission from the server by all the adapters.

This feature includes AFT feature.

IMPORTANT:

- All the adapters specified as a group of Adapter Teaming must exist on the same LAN. If they are connected to the separate switches, they will not work normally.
- The adapters specified as a group of Adaptive Load Balancing (ALB) can be connected to only Switching Hub.
- When exchange the mother board or option network card, make sure to remove the adapter team before exchanges and recreate the adapter team after exchange complete.
- Verify that the switch fully supports the IEEE 802.3ad standard before using IEEE802.3ad Link Aggregation (DLA).

Setup Teaming

When the system is Windows Server 2008 64-bit (x64) Editions / 2008 32-bit (x86) Editions

IMPORTANT:

- Teaming is not supported with Windows Server Core.
- SFT is not supported.
- Please confirm the port setting of switching hub (L2) matches the server network adapter Teaming mode.
- AFT/ALB setting must be done after System Update completed.

1. Open the [Device Manager].
2. Open [Network adapters] → [Intel(R)xxx] properties.
3. Click [Teaming] tab and check the [Team this adapter with other adapters] check box.

   Click [New Team].
4. Fill the name of the team in [Specify a name for the team] and click [Next].
5. Include the adapter to the team and click [next].
6. Select a team type ([Adapter Fault Tolerance]/[Adaptive Load Balancing]).

   Click [next].
7. Click [Finish].
8. Click [TEAM:"Team name"] from [Device manager] → [Network adapters] to modify the team.

   Click [Settings] tab and click [Modify Team] button.
9. Refer to the following procedure to set the team member adapter priority status.
   - Set Primary

     Point the adapter and click [Set Primary] button.
   - Set Secondary

     Point the adapter and click [Set Secondary] button.

NOTE: Adapter priority config can be confirmed by the following procedure

1. Click [TEAM:"Team name"] from [Device manager] → [Network adapters].
2. Click [Settings] and confirm Adapters in team list.

10. Click [Test Switch] → [Run test] to confirm the adapter team is properly setup.

    Confirm the result in [Test results]

    Even the system are normal, the following mismatch message will appear sometimes. Please recheck the switching hub (L2) port and nothing problem with the setting ignore the messages.

    – The switch is configured with aggregatedd ports, but the team type does not support port aggregation. The switch is configured with VLAN tagging, but the team has no VLANs.

    – Change the team type to SLA, reconfigure the switch for link aggregation, or disable VLAN tagging on the switch.

11. Reboot the system.

When the system is Windows Server 2003 x64 Editions / Windows Server 2003

IMPORTANT:

- AFT/ALB setting must be done after System Update completed.
- SFT is not supported.
- Please confirm the port setting of switching hub (L2) matches the server network adapter Teaming mode.

1. Open the [Device Manager].
2. Open [Network adapters] → [Intel(R)xxx] properties.
3. Click [Teaming] tab and check the [Team this adapter with other adapters] check box.

   Click [New Team].
4. Fill the name of the team in [Specify a name for the team] and click [Next].
5. Include the adapter to the team and click [next].
6. Select a team type([Adapter Fault Tolerance]/[Adaptive Load Balancing]).

   Click [next].
7. Click [Finish].
8. Click [TEAM:"Team name"] from [Device manager] → [Network adapters] to modify the team.

   Click [Settings] tab and click [Modify Team] button.

9. Refer to the following procedure to set the team member adapter priority status.
   - Set Primary

     Point the adapter and click [Set Primary] button.
   - Set Secondary

     Point the adapter and click [Set Secondary] button.

   NOTE: Adapter priority config can be confirmed by the following procedure

   1. Click [TEAM:"Team name"] from [Device manager] → [Network adapters].
   2. Click [Settings] and confirm Adapters in team list.

10. Click [Test Switch] → [Run test] to confirm the adapter team is properly setup.

    Confirm the result in [Test results]

11. Reboot the system.

Remove Team

This procedure is common in Windows Server 2003 and Windows Server 2008.

1. Open the [Device Manager].
2. Click [Network adapters], and open [TEAM:"Team name"] properties.
3. Click [Setting] tab.
4. Click [Remove Team] button.
5. Click [Yes] to the message.
6. Confirm [TEAM:"Team name"] adapter in not existing in [Network adapters] tree and reboot the system.

SETTING WOL

Refer to the following procedure to enable WOL.

When the system is Windows Server 2008 64-bit (x64) Edition / Windows Server 2008 32-bit (x86) Edition

1. Start Device Manager.
2. Point to [Network adapters] and double click [Intel(R) 82576 Gigabit Dual Port Server Network Connection]/[Intel(R) 82576 Gigabit Dual Port Server Network Connection #2] to open the adapter [Properties].
3. Click [Power Management] tab and change setting in [Wake On LAN] according to the following list.

Setting item	Default setting	Change setting
"Wake On Directed Packet"	ON	OFF
"Wake On Magic Packet"	ON	OFF
"Wake on Magic Packet from power off state"	OFF	ON

NOTES:

- [Power Saver Options] setting is not necessary to change.
- Above setting will maintained until manually resetting are executed.

IMPORTANT: The parameters of [Wake On LAN] will not exist, if the network port are not available of WOL.

4. Click [OK].
5. Reboot the system.

IMPORTANT:

- WOL (Wake On Lan) are only available on system Shutdown mode.
- WOL (Wake On Lan) is not available on system Hibernate and Sleep mode.

When the system is Windows Server 2003 x64 Editions / Windows Server 2003

When PROSet is not installed

1. Start Device Manager.
2. Point to [Network adapters] and double click [Intel(R) 82576 Gigabit Dual Port Server Network Connection]/[Intel(R) 82576 Gigabit Dual Port Server Network Connection #2] to open the adapter [Properties].
3. Click [Power Management] tab and change setting in [Wake On LAN] according to the following list.

Setting item	Default setting	Change setting
"Allow the computer to turn off this device to save power"	ON	ON
"Allow this device to bring the computer out of standby"	OFF	ON

4. Click [Advanced] tab and point to [Enable PME].
5. Set the "Enable" in [Value].
6. Click [OK].
7. Reboot the system.

When PROSet is installed

1. Start Device Manager.
2. Point to [Network adapters] and double click [Intel(R) 82576 Gigabit Dual Port Server Network Connection]/[Intel(R) 82576 Gigabit Dual Port Server Network Connection #2] to open the adapter [Properties].
3. Click [Power Management] tab and change setting in [Wake On LAN] according to the following list.

Setting item	Default setting	Change setting
"Wake On Directed Packet"	ON	ON
"Wake On Magic Packet"	ON	ON
"Wake on Magic Packet from power off state"	OFF	ON

NOTES:

- [Power Saver Options] setting is not necessary to change.
- Above setting will maintained until manually resetting are executed.

IMPORTANT: The parameters of [Wake On LAN] will not exist, if the network port are not available of WOL.

4. Click [OK].
5. Reboot the system.

IMPORTANT:

WOL (Wake On Lan) are only available on system Shutdown mode.

WOL (Wake On Lan) is not available on system Hibernate and Sleep mode.

SETTING RECEIVE SIDE SCALING

Two standard network adapter and optional network board need to change the Receive Side Scaling setting.

Please execute the following procedures.

> **NOTE:** This is common procedure for all Windows OS.

> **IMPORTANT:** Set it in the following procedure before installing Intel® PROSet in the case of Windows Server 2003/Windows Server 2003 x64 Editions.

1. Open the [Device Manager].
2. Open the property of [Intel(R) PRO/100…] or [Intel(R) PRO/1000…] under [Network Adapter] tree.
3. Click [Advanced] tab.
4. Change setting of the [Receive Side Scaling] to "Disabled".
5. Reboot the system.

> **IMPORTANT:** If [Receive Side Scaling] is not displayed on Windows Server 2003/Windows Server 2003 x64 Editions, uninstall Intel(R) PROSet according to [Uninstall Intel® PROSet].
>
> Set the [Receive Side Scaling] in above procedure.
>
> When re-install Intel® PROSet, refer to [PROSet] (Page B-35, 36).

Uninstall Intel® PROSet

1. Open the [Control Panel] and double click [Add or Remove Programs].
2. Intel® PROSet is present if the following is displayed in the list.

   Intel(R) Network Connections 13.2.8.0
3. Select above [Intel(R) PRO Network…], click [Change/Remove], and Select [All drivers and software] on [Remove Options] dialog.
4. Click [Remove] button.
5. Click [Finish] button.
6. Close all windows and reboot the system.

RE-INSTALLATION OF THE NETWORK DRIVER

When the system is Windows Server 2008 64-bit (x64) Edition / Windows Server 2008 32-bit (x86) Edition

Please run the "System Update" to re-install the network driver.

When the system is Windows Server 2003 x64 Editions

After installing OS and deleting the network drivers, if you want to re-install the network drivers, follow the procedure below.

1. Restart OS and logon to your system.
2. [Upgrade Device Driver Wizard] dialog box appears.

   Click [Next].
3. Confirm that the [Search for a suitable driver for my device (recommended)] radio button is selected and click [Next].
4. Select the [Specify a location] check box and deselect other check boxes.

   Click [Next].
5. Other [Upgrade Device Driver Wizard] dialog box opens.

   When using [Intel® 82576 Gigabit Dual Port Server Network Connection] / [Intel® 82576 Gigabit Dual Port Server Network Connection#2], specify [DVD-ROM drive letter:\003\win\winnt\w2k3amd\ma21\pro1000\winx64].

   Then click [OK].
6. Click [Next].
7. Click [Finished].

   Other [Upgrade Device Driver Wizard] dialog box appears.

When the system is Windows Server 2003

After installing OS and deleting the network drivers, if you want to re-install the network drivers, follow the procedure below.

1. Restart OS and logon to your system.
2. [Upgrade Device Driver Wizard] dialog box appears.

   Click [Next].
3. Confirm that the [Search for a suitable driver for my device (recommended)] radio button is selected and click [Next].
4. Select the [Specify a location] check box and deselect other check boxes.

   Click [Next].
5. Other [Upgrade Device Driver Wizard] dialog box opens.

   When using [Intel® 82576 Gigabit Dual Port Server Network Connection] / [Intel® 82576 Gigabit Dual Port Server Network Connection#2], specify [DVD-ROM drive letter:\003\win\winnt\dotnet\ma21\pro1000\win32].

   Then click [OK].

   After installing OS and deleting the network drivers, if you want to re-install the network drivers,
6. Click [Next].
7. Click [Finished].

   Other [Upgrade Device Driver Wizard] dialog box appears.

Available Switch Options for Windows Server 2003 Boot.ini File

Many different switches will be available if you edit Boot.ini file.

For the available switch options, refer to the following information:

- Microsoft Knowledge Base - Article ID: 833721

  "Available switch options for the Windows XP and the Windows Server 2003 Boot.ini files"

If your system has a memory capacity in excess of 4GB in its installing, adding /PAE switch in Boot.ini file will enable the system to be installed with over 4GB of memory.

However, the Microsoft operating system products which support /PAE switch option are limited.

Refer to the following article in Microsoft Knowledge Base to check the supported products.

- Microsoft Knowledge Base - Article ID: 291988

  "A description of the 4GB RAM tuning feature and the Physical Address Extension switch"

Below is the example on how to add /PAE switch to Boot.ini file.

1. Click [Start], point to [Settings], and then click [Control Panel].
2. In [Control Panel], double-click [System].
3. Click the [Advanced] tab, and then click [Settings] under [Setup and Recovery].
4. Under [System Setup], click [Edit] to open [Boot.ini].
5. Add "/PAE" to [Operating Systems] section in [Boot.ini] file, and then save it.

   <Example of Boot.ini file>

   ```
   [boot loader]
   timeout=30
   default=multi(0)disk(0)rdisk(0)partition(2)\WINDOWS
   [operating systems]
   multi(0)disk(0)rdisk(0)partition(2)\WINDOWS="Windows Server 2003" /fastdetect
   multi(0)disk(0)rdisk(0)partition(2)\WINDOWS="Windows Server 2003, PAE" /fastdetect
   /PAE
   C:\CMDCONS\BOOTSECT.DAT="Microsoft Windows Recovery Console" /cmdcons
   ```

   This is the end of editing Boot.ini file.

> **NOTE:** If you choose one of the items in the "Default operating system" drop-down list box in [Setup and Recovery] group box, you can make your system start automatically from the switch you specified.

SETTING FOR SOLVING PROBLEMS

Setup the following issue in advance so that your computer can recover from any trouble precisely and as soon as possible when it should occur.

Setting for Collecting Memory Dump (Debug Information)

Set for collecting memory dump using the procedure described in Chapter 5.

Re-installing the Operation System if Multiple Logical Drives Exist

[Before Re-installing the Operation System]

Be sure to make backup copies before re-installing the operation system just in case.

[Re-installing the Operation System]

1. Start the clean installation following the procedure described in this manual.
2. Specify the partition in which you want to install the operating system when the following message appears:

   The following list shows the existing partitions and unpartitioned space on this computer.

   Use the UP and DOWN ARROW keys to select an item in the list.

   * Cannot modify the drive letter of your system or boot volume. Confirm the proper drive letter is assigned and then, continue the setup.
3. Continue the clean installation again following the procedure described in this manual.
4. The drive letter of the re-installed system may differ from the one of the previous system. If you need to modify the drive letter, modify it according to the "Procedure for Modifying the Drive Letter".

[Procedure for Modifying the Drive Letter]

Be careful that the drive letter of the system or boot volume cannot modify with the following procedure.

1. Click Start menu, right-click [My Computer], and specify [Manage] to start [Computer Management].
2. Specify the [Disk Management] in the left side of the window.
3. Right-click the volume you want to modify the drive letter and specify the [Change Drive Letter and Path...].
4. Click [Yes].
5. Choose the [Assign a drive letter] and specify the drive letter you want to assign.
6. Click [OK].
7. If the following message appears, click [Yes].

> Changing the drive letter of a volume may cause programs to no longer run. Are you sure you want to change this drive letter?

8. Close the [Computer Management].

UPDATING THE SYSTEM - APPLYING SERVICE PACK -

Update the system in the situation below:

- CPU is expanded (expanded to single processor to multi-processor).
- Modified system configuration.
- Recovered the system using recovery process.

The system update brings the correction program provided by Microsoft to be applied to reinforce the system security. The system update is recommended.

It is necessary to use Service Pack2 or more. Service Pack 2 need not be applied again when Windows Server 2003 x64 Editions/ Windows Server 2003 CD-ROM where Service Pack 2 is included is used and it is installed.

If you install Windows Server 2003 CD-ROM which contains Service Pack 2, you do not have to apply "Hotfix for Windows x64" or "Hotfix for Windows Server 2003(KB921411)".

Go on the section of "Updating the System".

Local Update

When the system is Windows Server 2008

"Updating the System" applies the drivers necessary for NEC Express5800 Series.

1. Log on to the system using an administrator account.
2. Insert the NEC EXPRESSBUILDER DVD into the optical disk drive.
3. Hereinafter, the setup process is depending on the content selected at [Installing Windows Server 2008], follow each of the instructions.
   - If you have selected a full installation

     If the menu is displayed, click [Setup Windows] and click [Update the system].

     NOTE: Right-clicking on the Menu produces the same outcome.

   - If you have selected a Server Core installation

     1) Execute the following command line from command prompt to specify the optical disk drive (e.g. D drive).

        cd /d d:\003\win\winnt\bin\oschk\

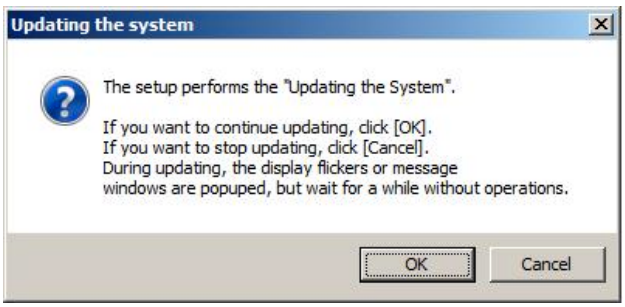
        ```
        C:\Users\administrator>cd /d D:\003\win\winnt\bin\oschk
        ```

     2) Type following command line and press **Enter**.

        oschk.bat

        ```
        D:\003\win\winnt\bin\oschk>oschk.bat
        ```

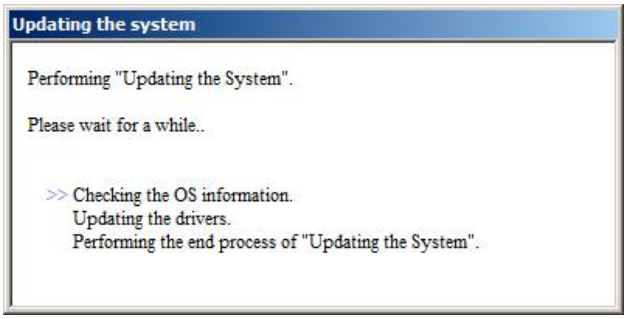
4. The following box appears.


Updating the system
The setup performs the "Updating the System".
If you want to continue updating, click [OK].
If you want to stop updating, click [Cancel].
During updating, the display flickers or message windows are popuped, but wait for a while without operations.
OK
Cancel

5. Read the message, and then click [OK].

The update starts.

NOTE: The following box appears during the update if you have deployed a full installation of Windows Server 2008. Wait until the update completes.


Updating the system
Performing "Updating the System".
Please wait for a while..
>> Checking the OS information.
Updating the drivers.
Performing the end process of "Updating the System".

6. When the following message appears, click [Yes] to restart the system.

Updating the system
"Updating the System" was finished.
The setup will apply the Service Pack continuously.
If you want to continue applying, click [Yes].
If you want to stop applying, click [No].
Yes
No

The system has been updated.

When the system is Windows Server 2003 x64 Editions / Windows Server 2003

Perform "Updating the System" and application of the "Hotfix (KB921411)".

IMPORTANT: In the situation below, make sure to apply "Updating the System" and "Hotfix (KB921411)".

- Modified system configuration
- Recovered the system using recovery process.

NOTE: If you use Windows Server 2003 x64 Editions / Windows Server 2003 CD-ROM which includes Service Pack 2, the application of "Hotfix (KB921411)" is not required.

Application process of the Hotfix (KB921411)

Apply the "Hotfix (KB921411)" before execute "Updating the System".

1. Log on to the system by the account with administrator authority to the CPU blade (such as administrator).
2. Insert the NEC EXPRESSBUILDER DVD into the USB DVD-ROM drive of the server.
3. Click Start menu and [Run], and then execute the following command.

   <When Windows Server 2003 x64 Editions is used>

   <DVD-ROM Drive Letter>: \003\win\winnt\w2k3amd\qfe\enu\kb921411.exe

   <When the English version of Windows Server 2003 R2 is used>

   <DVD-ROM Drive Letter>: \003\win\winnt\dotnet\qfe\enu\kb921411.exe

   <When the Simplified Chinese version of Windows Server 2003 R2 is used>

   <DVD-ROM Drive Letter>: \003\win\winnt\dotnet\qfe\chs\kb921411.exe

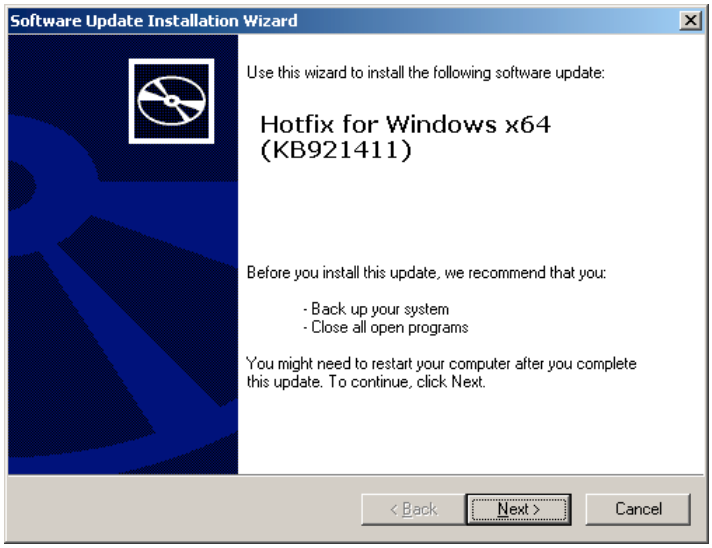
   <When the French version of Windows Server 2003 R2 is used>

   <DVD-ROM Drive Letter>: \003\win\winnt\dotnet\qfe\fra\kb921411.exe

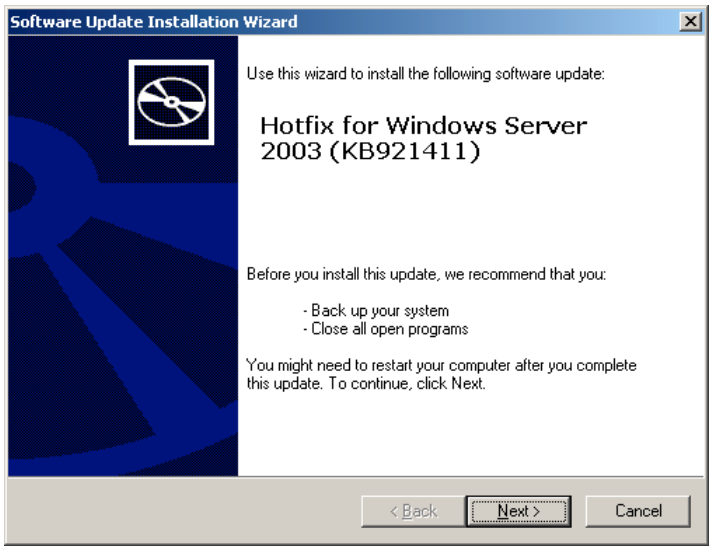
4. When the following message is displayed, click [Next].

After that, follow the message to continue the process.

<Windows Server 2003 x64 Editions>

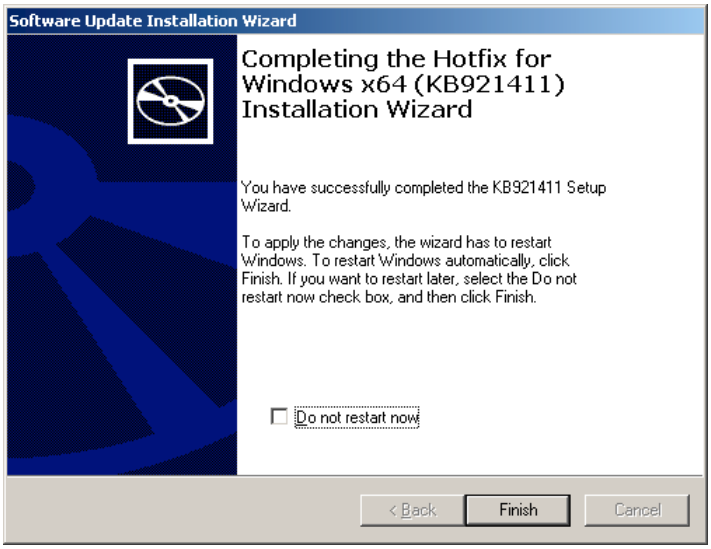

Software Update Installation Wizard
Use this wizard to install the following software update:
Hotfix for Windows x64 (KB921411)
Before you install this update, we recommend that you:
- Back up your system
- Close all open programs
You might need to restart your computer after you complete this update. To continue, click Next.
< Back
Next >
Cancel

<Windows Server 2003>

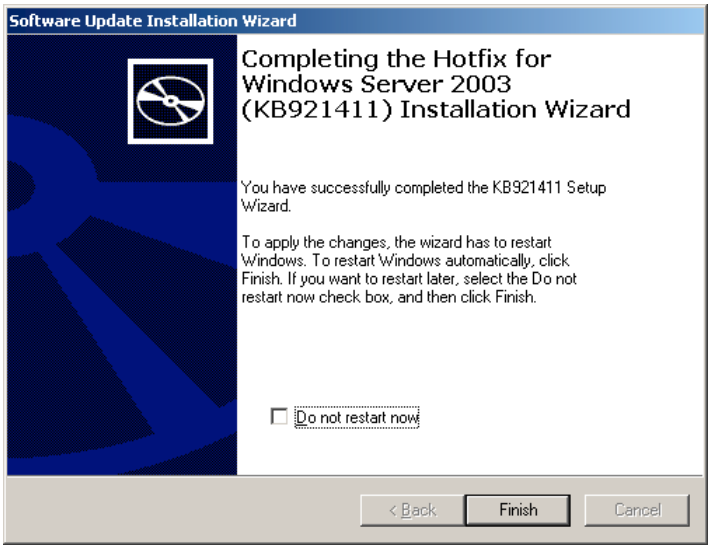

Software Update Installation Wizard
Use this wizard to install the following software update:
Hotfix for Windows Server 2003 (KB921411)
Before you install this update, we recommend that you:
- Back up your system
- Close all open programs
You might need to restart your computer after you complete this update. To continue, click Next.
< Back
Next >
Cancel

5. When the following message is displayed, make sure to click [Finish] to restart the system

<Windows Server 2003 x64 Editions>


Software Update Installation Wizard
Completing the Hotfix for Windows x64 (KB921411) Installation Wizard
You have successfully completed the KB921411 Setup Wizard.
To apply the changes, the wizard has to restart Windows. To restart Windows automatically, click Finish. If you want to restart later, select the Do not restart now check box, and then click Finish.
Do not restart now
< Back
Finish
Cancel

<Windows Server 2003>


Software Update Installation Wizard
Completing the Hotfix for Windows Server 2003 (KB921411) Installation Wizard
You have successfully completed the KB921411 Setup Wizard.
To apply the changes, the wizard has to restart Windows. To restart Windows automatically, click Finish. If you want to restart later, select the Do not restart now check box, and then click Finish.
Do not restart now
< Back
Finish
Cancel

With that, application process of the Hotfix (KB921411) is finished.

Application process of "Updating the System"

"Updating the System" applies the drivers necessary for NEC Express5800 Series.

Follow this process after Hotfix for Windows x64 (KB921411) or Hotfix for Windows Server 2003 (KB921411) had been applied.

NOTE: If you install Windows CD-ROM that contains Service Pack 2 to your system, you do not have to apply Service pack 2 again.

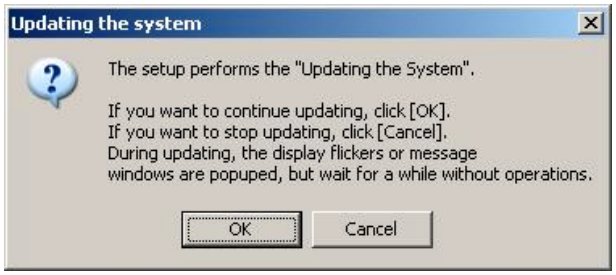
1. Log on to the system with the account that has administrative privilege (e.g. administrator).
2. Insert the NEC EXPRESSBUILDER DVD into the USB DVD-ROM drive of server.

   The Menu will be displayed
3. Left-click on [Setup Windows], and then click [Update the system].

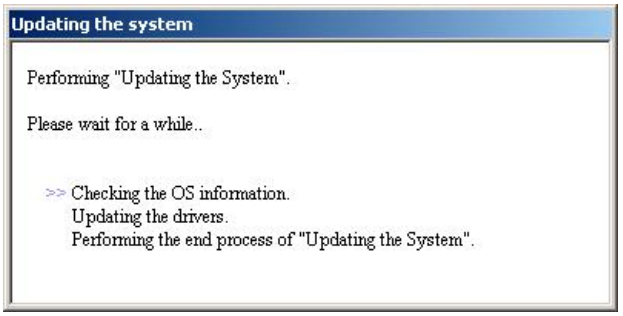
NOTE: Right-clicking on the Menu produces the same outcome.

Follow the message of the screen to proceed the application.

[OK] dialog box will be displayed.


Updating the system
The setup performs the "Updating the System".
If you want to continue updating, click [OK].
If you want to stop updating, click [Cancel].
During updating, the display flickers or message
windows are popuped, but wait for a while without operations.
OK
Cancel

NOTE: The following box appears during the update if you have deployed a full installation of Windows Server 2003. Wait until the update completes.

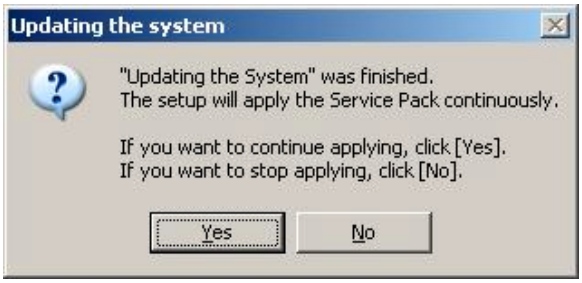

Updating the system
Performing "Updating the System".
Please wait for a while..
>> Checking the OS information.
Updating the drivers.
Performing the end process of "Updating the System".

IMPORTANT: During the "Updating the System", the following message may be shown, but there is no impact to the operation.

Do not click [Cancel] since it may be taken away after a few seconds

Found New Hardware Wizard
Welcome to the Found New Hardware Wizard
Windows will search for current and updated software by looking on your computer, on the hardware installation CD, or on the Windows Update Web site (with your permission).
Read our privacy policy
Can Windows connect to Windows Update to search for software?
Yes, this time only
Yes, now and every time I connect a device
No, not this time
Click Next to continue.
< Back
Next >
Cancel

4. Click [Yes] to restart the system.


Updating the system
"Updating the System" was finished.
The setup will apply the Service Pack continuously.
If you want to continue applying, click [Yes].
If you want to stop applying, click [No].
Yes
No

5. When the reboot is started, remove the NEC EXPRESSBUILDER DVD from the USB DVD-ROM drive immediately.

Recovery process

If "Updating the System" is executed before the application of the "Hotfix for Windows x64 (KB921411)" or "Hotfix for Windows Server 2003 (KB921411)", "!" may be displayed on the USB root hub.

If "!" is displayed on the USB root hub, perform application of the "Hotfix for Windows x64 (KB921411)" or "Hotfix for Windows Server 2003 (KB921411)" and the "Updating the System" according to the following process.

1. Start the Windows Explorer, and click [Tools] and [Folder Options].
2. Select [Files and Folders] - [Hidden files and folders] - [Show hidden files and folders] radio button from Advanced settings in the [View] tab.
3. Check off the following check box in the [Files and Folders] from Advanced settings in the [View] tab, and then click [OK].

   ☐ Hide extensions for know file type

   ☐ Hide protected operating system files [Recommended]

   When the message "You have chosen to display protected operating system files..." is displayed, click [Yes].
4. Make sure of the files.

   Open "<System drive:>\WINDOWS\system32\drivers" directory, and make sure usbhub.sys and usbport.sys are exists in the directory.

   If you can not found them, copy the files according to the following process.

   (1) Open "<System drive:>\WINDOWS\system32\dllcache" directory.

   (2) Copy usbhub.sys and usbport.sys from the directory noted above to "<System drive:>\WINDOWS\system32\drivers".
5. Restart the system.
6. Refer to [Application process of the Hotfix (KB921411)] and apply the "Hotfix for Windows x64 (KB921411)" or "Hotfix for Windows Server 2003 (KB921411)".
7. Refer to [Application process of "Updating the System"] and execute "Updating the System".
8. Restart the system.

With that, process is finished.

Update from TS Client (Windows Server 2008)

Updating the System

IMPORTANT: Make sure that the TS client DVD-ROM is assigned to a network driver to be shared. If not, assign the TS client to make it shared.

1. Log on to the system by the account with administrator authority to TS client (such as administrator).
2. Insert the NEC EXPRESSBUILDER DVD into the USB DVD-ROM drive of the TS client.

   If the menu appears on the TS client screen, terminate the menu.
3. <Windows Server 2008 64-bit(x64) Edition>

   Select [Run] from the [Start] menu, enter "DVD-ROM drive name on TS client: \003\win\winnt\ws2008x64\update.vbs" on the [Open] box, and click [OK].

   <Windows Server 2008 32-bit(x86) Edition>

   Select [Run] from the [Start] menu, enter "DVD-ROM drive name on TS client: \003\win\winnt\ws2008\update.vbs" on the [Open] box, and click [OK].

   Then advance the processing depending on the messages appearing on the TS client screen.

   If the following screen appears, click [Close].

IMPORTANT: Perform the re-connection to the CPU blade after about five minutes have passed. While the system update is applied, the terminal service connection is automatically disconnected and the CPU blade is restarted.

Update from TS Client (Windows Server 2003 x64 Editions)

> **NOTE:** Configure the setting for remote desktop for management referring to the section of"Remote desktop for management" before starting the setup.

Perform "Updating the System" and application of the "Hotfix for Windows x64 (KB921411)"

Application process of the Hotfix for Windows x64 (KB921411)

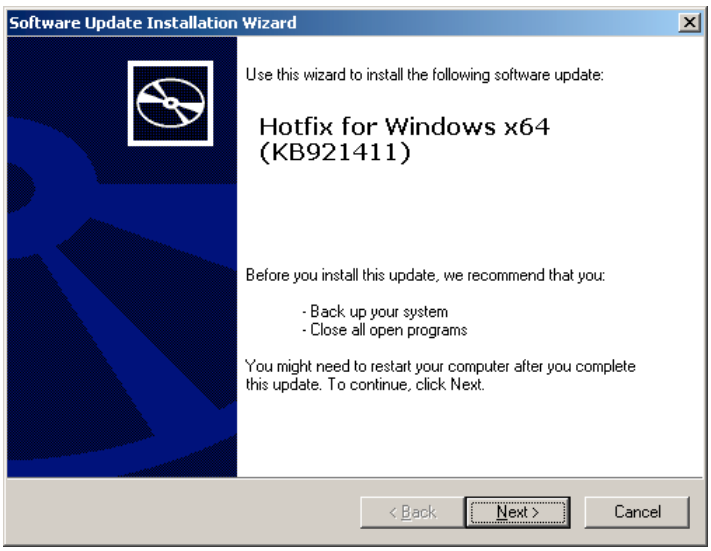
Apply the "Hotfix for Windows x64(KB921411)" before execute "Updating the System".

1. Log on to the system by the account with administrator authority to TS client (such as administrator).
2. Insert the NEC EXPRESSBUILDER DVD into the USB DVD-ROM drive of the TS Client.

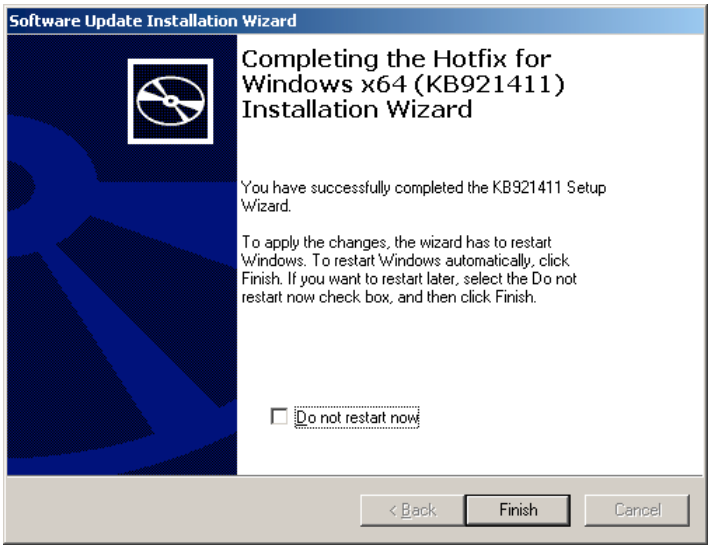
   If the menu appears on the TS client screen, terminate the menu.
3. Click Start menu and [Run], and then execute the following command.

   <DVD-ROM Drive Letter>: \003\win\winnt\w2k3amd\qfe\enu\kb921411.exe
4. When the following message is displayed, click [Next].

   After that, follow the message to continue the process.


Software Update Installation Wizard
Use this wizard to install the following software update:
Hotfix for Windows x64 (KB921411)
Before you install this update, we recommend that you:
- Back up your system
- Close all open programs
You might need to restart your computer after you complete this update. To continue, click Next.
< Back
Next >
Cancel

5. When the following message is displayed, make sure to click [Finish] to restart the system.


Software Update Installation Wizard
Completing the Hotfix for Windows x64 (KB921411) Installation Wizard
You have successfully completed the KB921411 Setup Wizard.
To apply the changes, the wizard has to restart Windows. To restart Windows automatically, click Finish. If you want to restart later, select the Do not restart now check box, and then click Finish.
Do not restart now
< Back
Finish
Cancel

With that, application process of the Hotfix for Windows x64 (KB921411) is finished.

Updating the System

IMPORTANT: Make sure that the TS client DVD-ROM is assigned to a network driver to be shared. If not, assign the TS client to make it shared.

1. Log on to the system by the account with administrator authority to TS client (such as administrator).
2. Insert the NEC EXPRESSBUILDER DVD into the USB DVD-ROM drive of the TS client.

   If the menu appears on the TS client screen, terminate the menu.
3. Select [Run] from the [Start] menu, enter "DVD-ROM drive name on TS client:\003\win\winnt\w2k3amd\update.vbs" on the [Open] box, and click [OK].

   Then advance the processing depending on the messages appearing on the TS client screen.

   If the following screen appears, click [Close].

IMPORTANT: Perform the re-connection to the CPU blade after about five minutes have passed. While the system update is applied, the terminal service connection is automatically disconnected and the CPU blade is restarted.

Update from TS Client (Windows Server 2003)

> **NOTE:** Configure the setting for remote desktop for management referring to the section of "Remote desktop for management" before starting the setup.

Perform "Updating the System" and application of the "Hotfix for Windows (KB921411)".

Application process of the Hotfix for Windows Server 2003 (KB921411)

Apply the "Hotfix for Windows Server 2003 (KB921411)" before execute "Updating the System".

1. Log on to the system by the account with administrator authority to TS client (such as administrator).
2. Insert the NEC EXPRESSBUILDER DVD into the USB DVD-ROM drive of the TS Client.

   If the menu appears on the TS client screen, terminate the menu.
3. Click Start menu and [Run], and then execute the following command.

   When the English version of Windows Server 2003 R2 is used

   <DVD-ROM Drive Letter>: \003\win\winnt\dotnet\qfe\enu\kb921411.exe

   When the Simplified Chinese version of Windows Server 2003 R2 is used

   <DVD-ROM Drive Letter>: \003\win\winnt\dotnet\qfe\chs\kb921411.exe

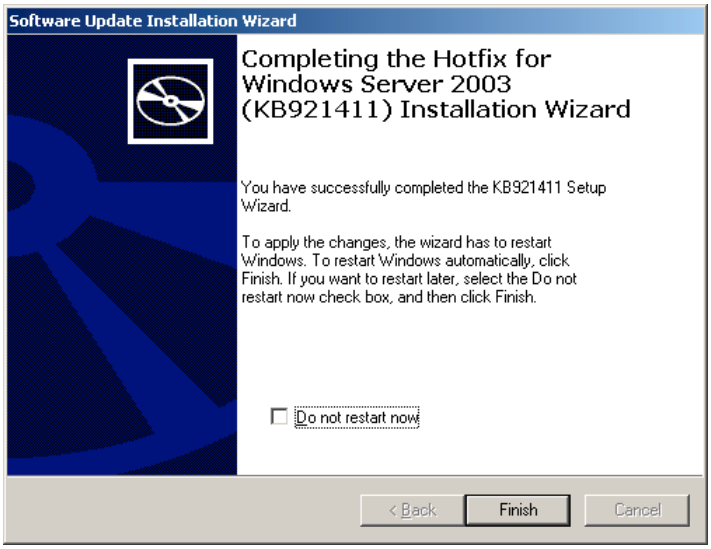
   When the French version of Windows Server 2003 R2 is used

   <DVD-ROM Drive Letter>: \003\win\winnt\dotnet\qfe\fra\kb921411.exe
4. When the following message is displayed, click [Next].

   After that, follow the message to continue the process.

Software Update Installation Wizard
Use this wizard to install the following software update:
Hotfix for Windows Server 2003 (KB921411)
Before you install this update, we recommend that you:
- Back up your system
- Close all open programs
You might need to restart your computer after you complete this update. To continue, click Next.
< Back
Next >
Cancel

5. When the following message is displayed, make sure to click [Finish] to restart the system.


Software Update Installation Wizard
Completing the Hotfix for Windows Server 2003 (KB921411) Installation Wizard
You have successfully completed the KB921411 Setup Wizard.
To apply the changes, the wizard has to restart Windows. To restart Windows automatically, click Finish. If you want to restart later, select the Do not restart now check box, and then click Finish.
Do not restart now
< Back
Finish
Cancel

With that, application process of the Hotfix for Windows Server 2003 (KB921411) is finished.

Updating the System

IMPORTANT: Make sure that the TS client CD-ROM is assigned to a network driver to be shared. If not, assign the TS client to make it shared.

1. Log on to the system by the account with administrator authority to TS client (such as administrator).
2. Insert the NEC EXPRESSBUILDER DVD into the USB DVD-ROM drive of the TS client.

   If the menu appears on the TS client screen, terminate the menu.
3. Select [Run] from the [Start] menu, enter "DVD-ROM drive name on TS client:\003\win\winnt\dotnet\update.vbs" on the [Open] box, and click [OK].

   Then advance the processing depending on the messages appearing on the TS client screen.

   If the following screen appears, click [Close].

IMPORTANT:

- Perform the re-connection to the CPU blade after about five minutes have passed. While the system update is applied, the terminal service connection is automatically disconnected and the CPU blade is restarted.
- During the "Updating the System", the following message may be shown, but there is no impact to the operation.
  Do not click [cancel] since it may be taken away after a few seconds

Found New Hardware Wizard
Welcome to the Found New Hardware Wizard
Windows will search for current and updated software by looking on your computer, on the hardware installation CD, or on the Windows Update Web site (with your permission).
Read our privacy policy
Can Windows connect to Windows Update to search for software?
Yes, this time only
Yes, now and every time I connect a device
No, not this time
Click Next to continue.
< Back
Next >
Cancel

About Windows Activation

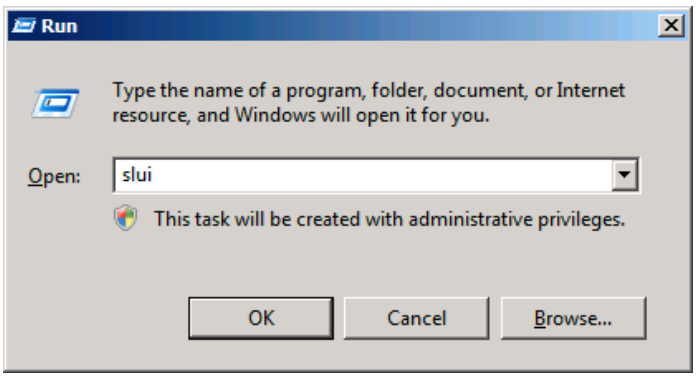
You have to agree to the license agreement to use Windows Server 2008, Windows Server 2003 x64 Edition or Windows Server 2003.

Windows activation process is as follows.

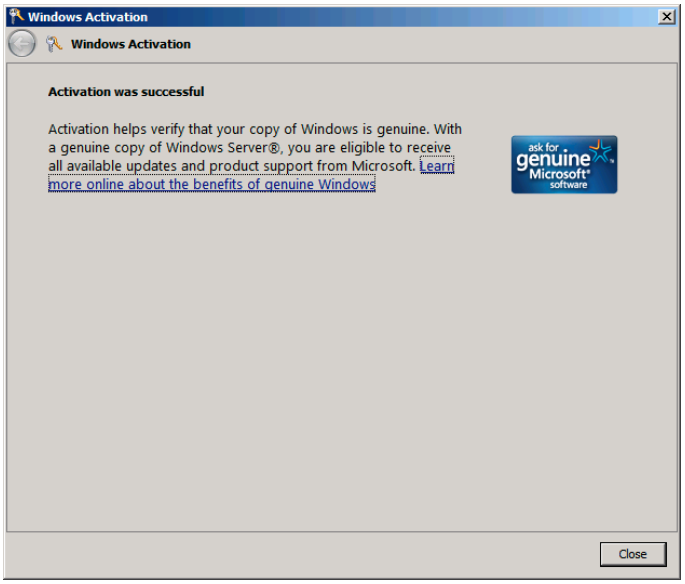
Windows Server 2008

For a server running a full installation

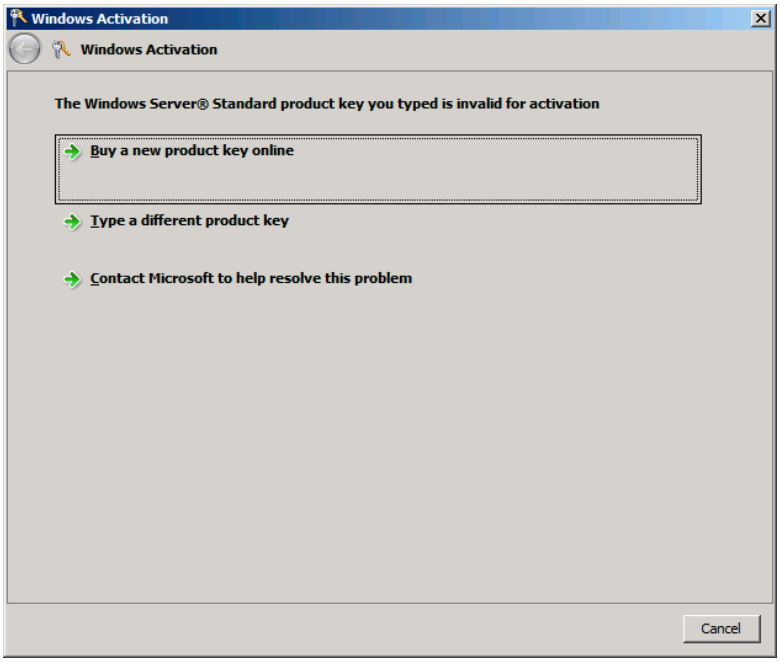
1. Go to the Start menu, and in the Run dialog box, type **slui**, and press **Enter**.


Run
Type the name of a program, folder, document, or Internet resource, and Windows will open it for you.
Open:
slui
This task will be created with administrative privileges.
OK
Cancel
Browse...

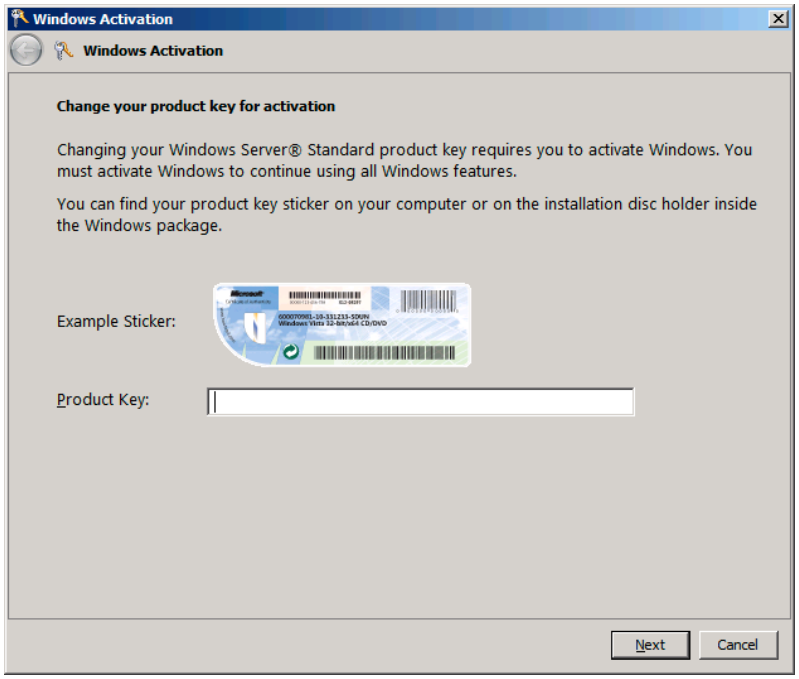
IMPORTANT: If the following message appears, Windows has already been activated on your system. Click [Close] to exit.


Windows Activation
Windows Activation
Activation was successful
Activation helps verify that your copy of Windows is genuine. With a genuine copy of Windows Server®, you are eligible to receive all available updates and product support from Microsoft. Learn more online about the benefits of genuine Windows
ask for genuine Microsoft software
Close

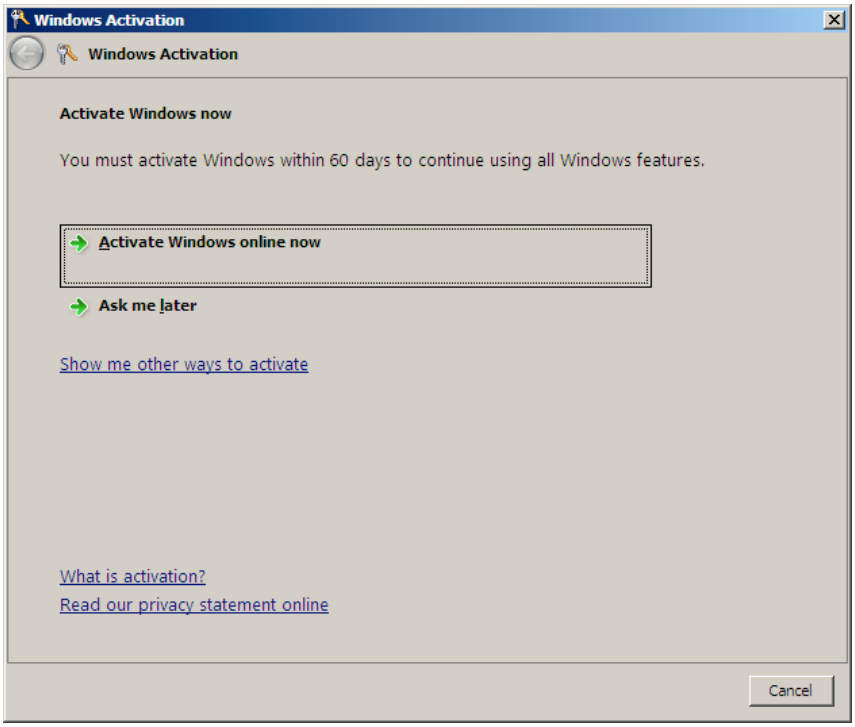
2. In the following screen, click [Type a different product key].


Windows Activation
Windows Activation
The Windows Server® Standard product key you typed is invalid for activation
Buy a new product key online
Type a different product key
Contact Microsoft to help resolve this problem
Cancel

3. Type the product key shown on your COA label, and click [Next].


Windows Activation
Windows Activation
Change your product key for activation
Changing your Windows Server® Standard product key requires you to activate Windows. You must activate Windows to continue using all Windows features.
You can find your product key sticker on your computer or on the installation disc holder inside the Windows package.
Example Sticker:
Product Key:
Next
Cancel

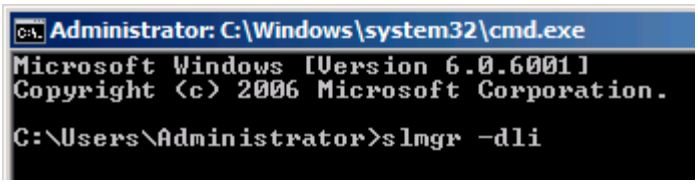
4. Activate Windows.


Windows Activation
Windows Activation
Activate Windows now
You must activate Windows within 60 days to continue using all Windows features.
Activate Windows online now
Ask me later
Show me other ways to activate
What is activation?
Read our privacy statement online
Cancel

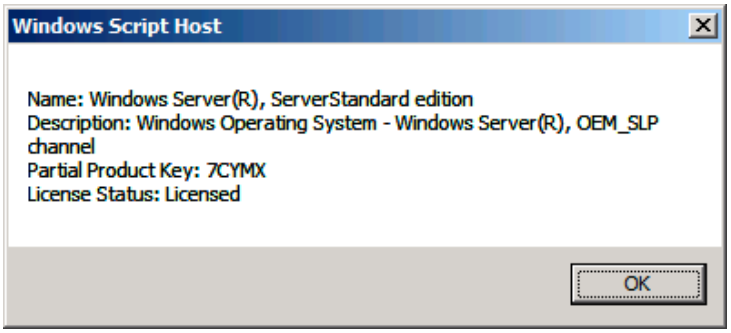
The Windows activation is complete.

For a server running a Server Core installation

1. At the command prompt, type **Slmgr –dli**, and press **Enter**.

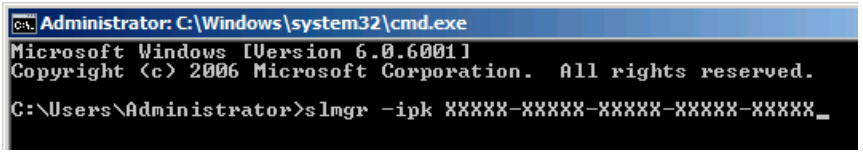


IMPORTANT: If the following message appears, Windows has already been activated on your system. Click ✕ to exit.

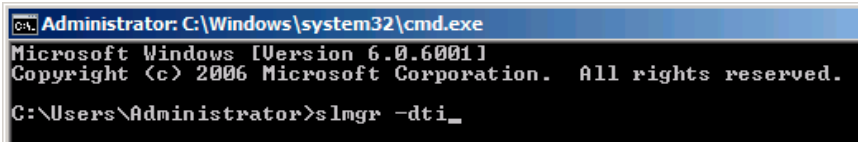

Windows Script Host
Name: Windows Server(R), ServerStandard edition
Description: Windows Operating System - Windows Server(R), OEM_SLP channel
Partial Product Key: 7CYMX
License Status: Licensed
OK

2. Type **slmgr –ipk <PID>**, and press **Enter**.

   * PID is your product key on the COA label.


Administrator: C:\Windows\system32\cmd.exe
Microsoft Windows [Version 6.0.6001]
Copyright (c) 2006 Microsoft Corporation. All rights reserved.
C:\Users\Administrator>slmgr -ipk XXXXX-XXXXX-XXXXX-XXXXX-XXXXX

3. Type **slmgr –dti** to obtain an installation ID for Windows activation, and press **Enter**.

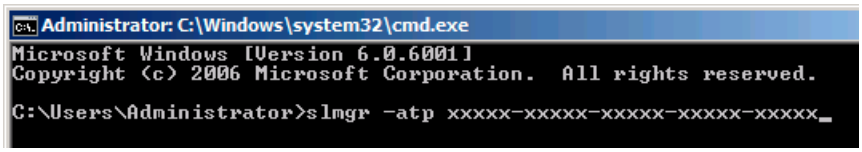

Administrator: C:\Windows\system32\cmd.exe
Microsoft Windows [Version 6.0.6001]
Copyright (c) 2006 Microsoft Corporation. All rights reserved.
C:\Users\Administrator>slmgr -dti

4. See "%systemroot%\system32\slui\phone.inf" for the phone number of the Microsoft customer service.

5. Call the above number, inform the representative of the installation ID which you obtained in step 3, and receive a confirmation ID.

6. At the command prompt, type **slmgr –atp <CID>**, and press Enter.

* CID is the confirmation ID that you received from the call center.


Administrator: C:\Windows\system32\cmd.exe
Microsoft Windows [Version 6.0.6001]
Copyright (c) 2006 Microsoft Corporation. All rights reserved.
C:\Users\Administrator>slmgr -atp xxxxx-xxxxx-xxxxx-xxxxx-xxxxx

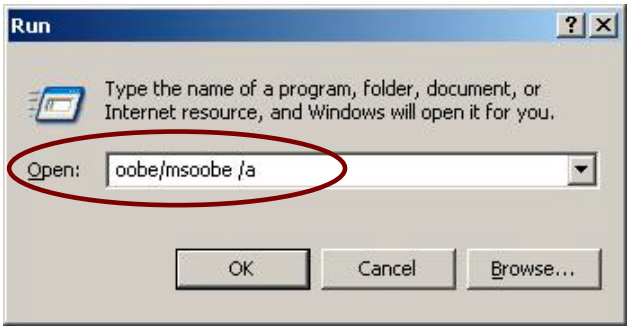
The Windows activation is complete.

Windows Server 2003 x64 Editions / Windows Server 2003

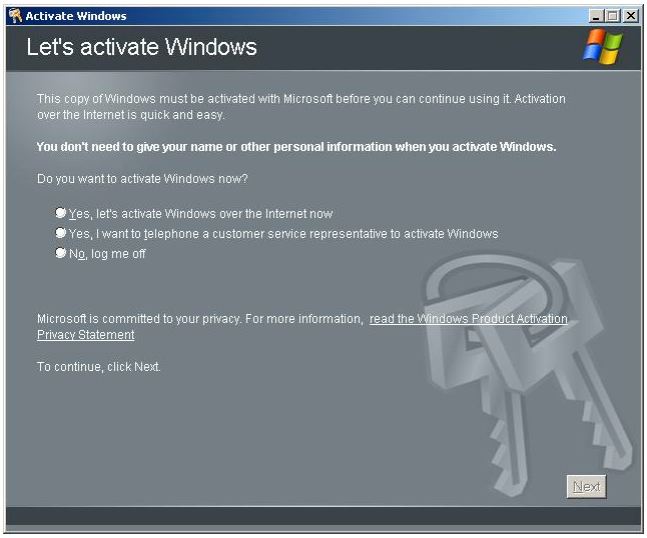
1. Click [Run] on [Start] menu.

Type as follows in the [Open:] box, and click [OK].

oobe/msoobe /a

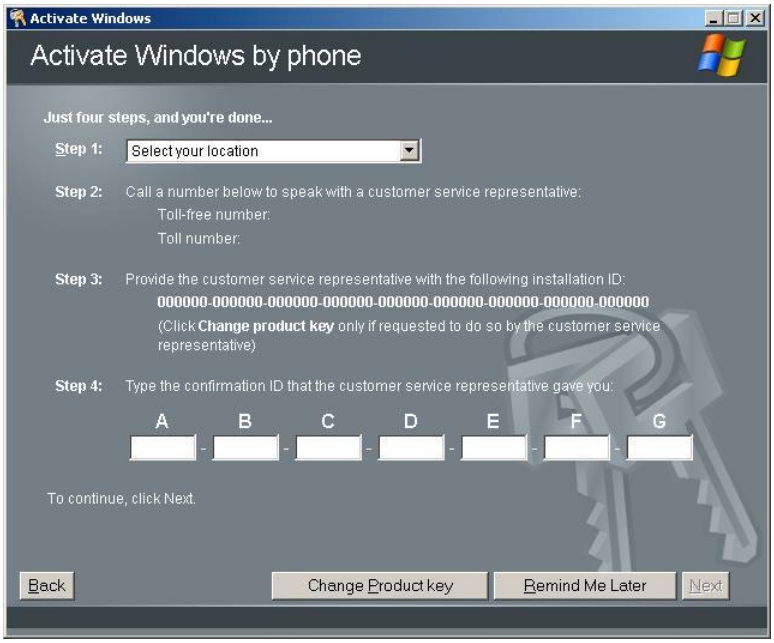


2. When the screen as follows is displayed, click [Next].


Activate Windows
Let's activate Windows
This copy of Windows must be activated with Microsoft before you can continue using it. Activation over the Internet is quick and easy.
You don't need to give your name or other personal information when you activate Windows.
Do you want to activate Windows now?
Yes, let's activate Windows over the Internet now
Yes, I want to telephone a customer service representative to activate Windows
No, log me off
Microsoft is committed to your privacy. For more information, read the Windows Product Activation Privacy Statement
To continue, click Next.
Next

The following screen is displayed.

3. Process "Windows activation" according to the following message.



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